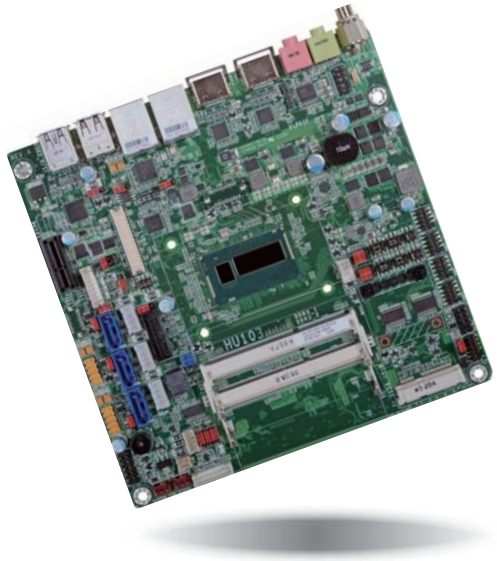

HU101

Mini-ITX Industrial Motherboard

User's Manual

AD31510450

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Changes after the publication's first release will be based on the product's revision. The website will always provide the most updated information.

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FCC and DOC Statement on Class B

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio TV technician for help.

Notice:

1. The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
2. Shielded interface cables must be used in order to comply with the emission limits.

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About this Manual

An electronic file of this manual is included in the CD. To view the user's manual in the CD, insert the CD into a CD-ROM drive. The autorun screen (Main Board Utility CD) will appear. Click "User's Manual" on the main menu.

Warranty

1. Warranty does not cover damages or failures that arised from misuse of the product, inability to use the product, unauthorized replacement or alteration of components and product specifications.

2. The warranty is void if the product has been subjected to physical abuse, improper installation, modification, accidents or unauthorized repair of the product.

3. Unless otherwise instructed in this user's manual, the user may not, under any circumstances, attempt to perform service, adjustments or repairs on the product, whether in or out of warranty. It must be returned to the purchase point, factory or authorized service agency for all such work.

4. We will not be liable for any indirect, special, incidental or consequencial damages to the product that has been modified or altered.

Static Electricity Precautions

It is quite easy to inadvertently damage your PC, system board, components or devices even before installing them in your system unit. Static electrical discharge can damage computer components without causing any signs of physical damage. You must take extra care in handling them to ensure against electrostatic build-up.

1. To prevent electrostatic build-up, leave the system board in its anti-static bag until you are ready to install it.

2. Wear an antistatic wrist strap.

3. Do all preparation work on a static-free surface.

4. Hold the device only by its edges. Be careful not to touch any of the components, contacts or connections.

5. Avoid touching the pins or contacts on all modules and connectors. Hold modules or connectors by their ends.

Important:
Electrostatic discharge (ESD) can damage your processor, disk drive and other components. Perform the upgrade instruction procedures described at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the system chassis. If a wrist strap is unavailable, establish and maintain contact with the system chassis throughout any procedures requiring ESD protection.

Safety Measures

To avoid damage to the system:
- Use the correct AC input voltage range.

To reduce the risk of electric shock:
- Unplug the power cord before removing the system chassis cover for installation or servicing. After installation or servicing, cover the system chassis before plugging the power cord.

About the Package

The package contains the following items. If any of these items are missing or damaged, please contact your dealer or sales representative for assistance.

- One HU101 motherboard
- One Serial ATA data with power cable
- One DVD
- One QR (Quick Reference)

The board and accessories in the package may not come similar to the information listed above. This may differ in accordance to the sales region or models in which it was sold. For more information about the standard package in your region, please contact your dealer or sales representative.

Optional Items

- USB port cable
- Serial ATA data with power cable
- Power adapter (100W, 12V)
- Power adapter (120W, 19V)

The board and accessories in the package may not come similar to the information listed above. This may differ in accordance to the sales region or models in which it was sold. For more information about the standard package in your region, please contact your dealer or sales representative.

Before Using the System Board

Before using the system board, prepare basic system components.

If you are installing the system board in a new system, you will need at least the following internal components.

- Memory module
- Storage devices such as hard disk drive, CD-ROM, etc.

You will also need external system peripherals you intend to use which will normally include at least a keyboard, a mouse and a video display monitor.

Chapter 1 - Introduction

Specifications

Processor	• 4th generation Intel® Core™ processors : Intel® Core™ i7-4650U, 4M Cache, up to 3.3 GHz, 15W : Intel® Core™ i5-4300U, 3M Cache, up to 2.9 GHz, 15W • BGA 1168 packaging technology • 22nm process technology
Super I/O Address	• NCT6106/4Eh
System Memory	• Two 204-pin SODIMM sockets • Supports DDR3L 1333/1600MHz • Supports up to 16GB system memory • Supports dual channel memory interface • DRAM device technologies: 1Gb, 2Gb and 4Gb DDR3L DRAM technologies are supported for x8 and x16 devices, unbuffered, non-ECC
Expansion Interfaces	• 1 PCIe x1 slot • 1 Mini PCIe slot - Supports USB and PCIe signals - Supports mSATA - Supports full size Mini PCIe card
Graphics	• Intel® HD Graphics GT series • Display ports: 2 HDMI, 1 LVDS (default) or 1 eDP* (optional) • HDMI: resolution up to 4096x2304 @24Hz or 2560x1600 @60Hz • LVDS: NXP PTN3460, 24-bit, dual channel, resolution up to 1920x1200 @60Hz • eDP: resolution up to 3200x2000 @60Hz • Intel® Clear Video Technology • Intel® Advanced Vector Extensions 2.0 (Intel® AVX 2.0) Instructions • Supports DirectX 11.1, OpenGL 4.0, OpenCL 1.2
Audio	• Realtek ALC888 5.1-channel High Definition Audio • S/PDIF audio interface
LAN	• Intel® I210 PCI Express Gigabit Ethernet controller • Intel® I218 with iAMT9.5 Gigabit Ethernet Phy • Integrated 10/100/1000 transceiver • Fully compliant with IEEE 802.3, IEEE 802.3u, IEEE 802.3ab
Serial ATA	• 3 SATA 3.0 ports with data transfer rate up to 6Gb/s - SATA port 0 provides adequate space for SATA DOM • Integrated Advanced Host Controller Interface (AHCI) controller • Supports RAID 0/1/5 • Supports Intel® Smart Response Technology
Active Management Technology - AMT	• Supports iAMT9.5 • Out-of-band system access • Remote troubleshooting and recovery • Hardware-based agent presence checking • Proactive alerting • Remote hardware and software asset tracking
Trusted Platform Module - TPM* (optional)	• Provides a Trusted PC for secure transactions • Provides software license protection, enforcement and password protection
WatchDog Timer	• Watchdog timeout programmable via software from 1 to 255 seconds

Rear Panel I/O Ports	• 2 HDMI ports • 2 RJ45 LAN ports • 2 USB 2.0 ports • 2 USB 3.0 ports • Line-out and mic-in jacks
I/O Connectors	• 3 connectors for 6 external USB 2.0 ports • 1 connector for 2 external USB 3.0 ports • 1 vertical USB 2.0/1.1 port* (optional) • 4 connectors for 4 external serial ports (2.0mm pitch) - 2 RS232/422/485 (RS232 and/or power) - 2 RS232 • 1 LVDS LCD panel connector • 1 LCD/inverter power connector • 1 eDP connector* (optional) • 1 8-bit DIO connector • 1 DIO power connector • 4-pin 12V power connector • 1 front audio connector for line-out and mic-in jacks • 1 S/PDIF connector • 1 PS/2 connector for keyboard/mouse port • 1 LPC connector • 1 SMBus connector • 3 Serial ATA connectors • 3 Serial ATA power connectors • 1 front panel connector • 1 chassis intrusion connector • 3 fan connectors
BIOS	• AMI BIOS - 64Mbit SPI BIOS
Energy Efficient Design	• Supports ErP Lot6 power saving* (optional) • Supports ACPI • System Power Management • Wake-On-Events include: - Wake-On-PS/2 KB/Mouse* (optional) - Wake-On-USB KB/Mouse* (optional) - Wake-On-LAN - RTC timer to power-on the system • AC power failure recovery
Damage Free Intelligence	• Monitors CPU/system temperature and overheat alarm • Monitors VCORE/12V/5V/DDR voltages and failure alarm • Monitors CPU/system fan speed and failure alarm • Read back capability that displays temperature, voltage and fan speed
Power Consumption	• TBD
Temperature	• Operating: 0°C to 60°C • Storage: -20°C to 85°C

Humidity	• 5% to 90%
OS Support	• Windows 7 Ultimate x86 & SP1 (32-bit) • Windows 7 Ultimate x64 & SP1 (64-bit) • Windows 8 Enterprise x86 (32-bit) • Windows 8 Enterprise x64 (64-bit) • Windows 8.1 Enterprise x86 (32-bit) • Windows 8.1 Enterprise x64 (64-bit)
Dimensions	• Mini-ITX form factor • 170mm (6.7") x 170mm (6.7")

Note:
*Optional and is not supported in standard model. Please contact your sales representative for more information.

Features

• Watchdog Timer

The Watchdog Timer function allows your application to regularly "clear" the system at the set time interval. If the system hangs or fails to function, it will reset at the set time interval so that your system will continue to operate.

• DDR3L

DDR3L is a higher performance DDR3 SDRAM interface providing less voltage and higher speed successor. DDR3L SDRAM modules support 1333/1600MHz for DDR modules. DDR3L delivers increased system bandwidth and improved performance to provide its higher bandwidth and its increase in performance at a lower power.

• Graphics

The integrated Intel® HD graphics engine delivers an excellent blend of graphics performance and features to meet business needs. It provides excellent video and 3D graphics with outstanding graphics responsiveness. These enhancements deliver the performance and compatibility needed for today's and tomorrow's business applications. Supports 2 HDMI, 1 LVDS (default) or 1 eDP (optional) interfaces for display outputs.

• PCI Express

PCI Express is a high bandwidth I/O infrastructure that possesses the ability to scale speeds by forming multiple lanes.

• Serial ATA

Serial ATA is a storage interface that is compliant with SATA 1.0a specification. With speed of up to 6Gb/s (SATA 3.0), it improves hard drive performance faster than the standard parallel ATA whose data transfer rate is 100MB/s. The bandwidth of the SATA 3.0 will be limited by carrier board design.

• Gigabit LAN

Intel® I210 PCI Express Gigabit Ethernet and Intel® I218 with iAMT9.5 Gigabit Ethernet Phy controllers support up to 1Gbps data transmission.

• Wake-On-PS/2 (optional)

This function allows you to use the PS/2 keyboard or PS/2 mouse to power-on the system.

Important:
The 5V_standby power source of your power supply must support ≥720mA.

• Wake-On-LAN

This feature allows the network to remotely wake up a Soft Power Down (Soft-Off) PC. It is supported via the onboard LAN port or via a PCIe LAN card that uses the PCIe PME (Power Management Event) signal. However, if your system is in the Suspend mode, you can power-on the system only through an IRQ or DMA interrupt.

Important:
The 5V_standby power source of your power supply must support ≥720mA.

• Wake-On-USB (optional)

This function allows you to use a USB keyboard or USB mouse to wake up a system from the S3 (STR - Suspend To RAM) state.

Important:
If you are using the Wake-On-USB Keyboard/Mouse function for 2 USB ports, the 5V_standby power source of your power supply must support ≥1.5A. For 3 or more USB ports, the 5V_standby power source of your power supply must support ≥2A.

• RTC Timer

The RTC installed on the system board allows your system to automatically power-on on the set date and time.

• ACPI STR

The system board is designed to meet the ACPI (Advanced Configuration and Power Interface) specification. ACPI has energy saving features that enables PCs to implement Power Management and Plug-and-Play with operating systems that support OS Direct Power Management. ACPI when enabled in the Power Management Setup will allow you to use the Suspend to RAM function.

With the Suspend to RAM function enabled, you can power-off the system at once by pressing the power button or selecting "Standby" when you shut down Windows® without having to go through the sometimes tiresome process of closing files, applications and operating system. This is because the system is capable of storing all programs and data files during the entire operating session into RAM (Random Access Memory) when it powers-off. The operating session will resume exactly where you left off the next time you power-on the system.

Important:
The 5V_standby power source of your power supply must support ≥720mA.

• Power Failure Recovery

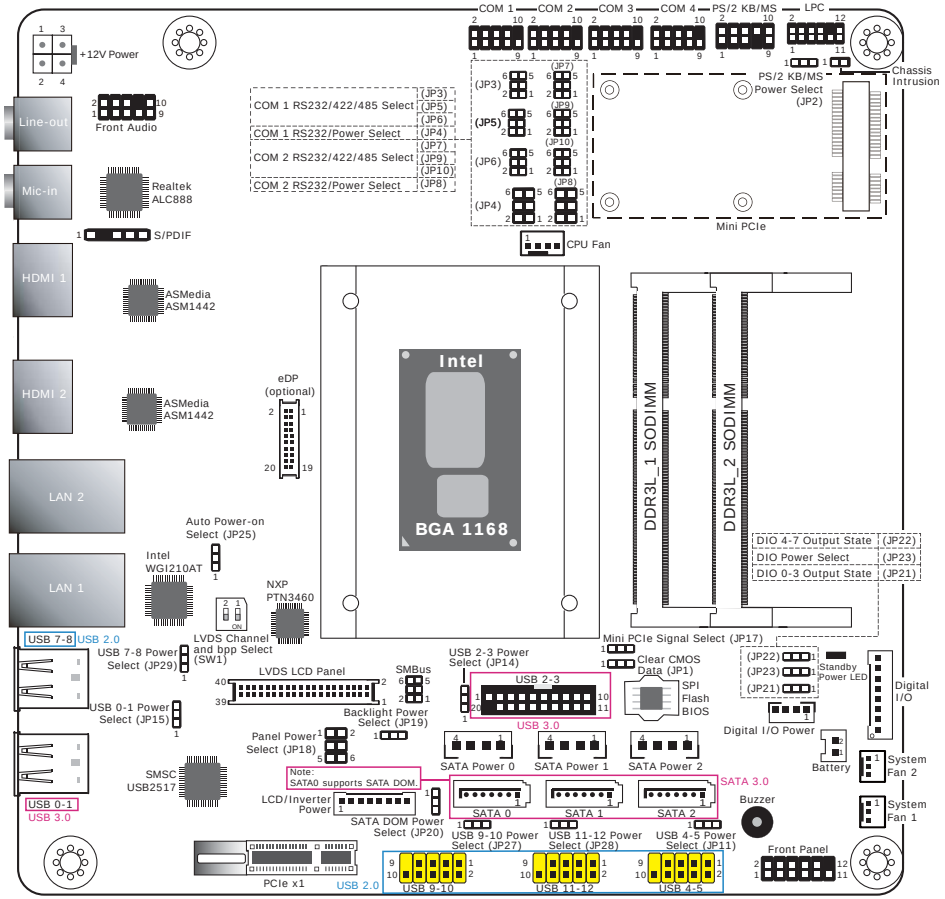
When power returns after an AC power failure, you may choose to either power-on the system manually or let the system power-on automatically.

• USB

The system board supports the new USB 3.0. It is capable of running at a maximum transmission speed of up to 5 Gbit/s (625 MB/s) and is faster than USB 2.0 (480 Mbit/s, or 60 MB/s) and USB 1.1 (12Mb/s). USB 3.0 reduces the time required for data transmission, reduces power consumption, and is backward compatible with USB 2.0. It is a marked improvement in device transfer speeds between your computer and a wide range of simultaneously accessible external Plug and Play peripherals.

Chapter 2 - Hardware Installation

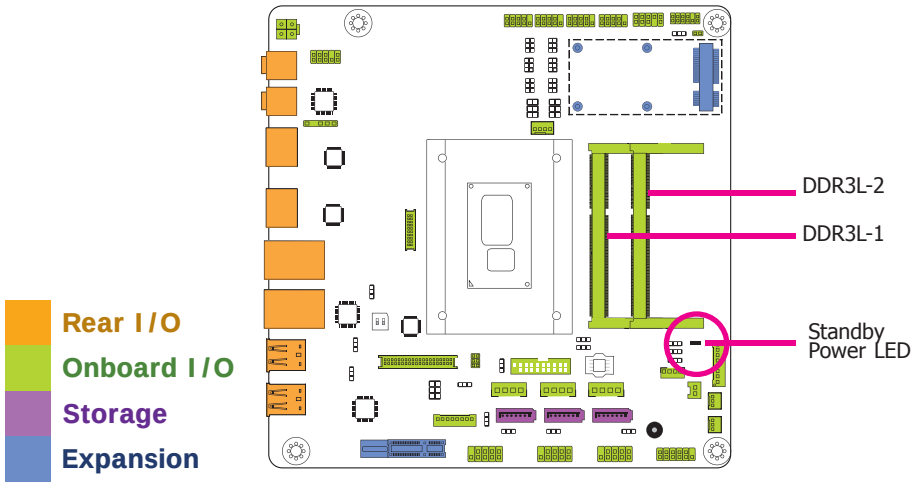
Board Layout



Important:
Electrostatic discharge (ESD) can damage your board, processor, disk drives, add-in boards, and other components. Perform installation procedures at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the system chassis. If a wrist strap is unavailable, establish and maintain contact with the system chassis throughout any procedures requiring ESD protection.

System Memory

Important:
When the Standby Power LED lights red, it indicates that there is power on the system board. Power-off the PC then unplug the power cord prior to installing any devices. Failure to do so will cause severe damage to the motherboard and components.



Features

- Two 204-pin DDR3L SODIMM sockets
- Supports 1333/1600MHz DDR3L SDRAM
- Supports up to 16GB system memory
- Supports dual channel memory interface

The system board supports the following memory interface.

Single Channel (SC)

Data will be accessed in chunks of 64 bits (8B) from the memory channels.

Dual Channel (DC)

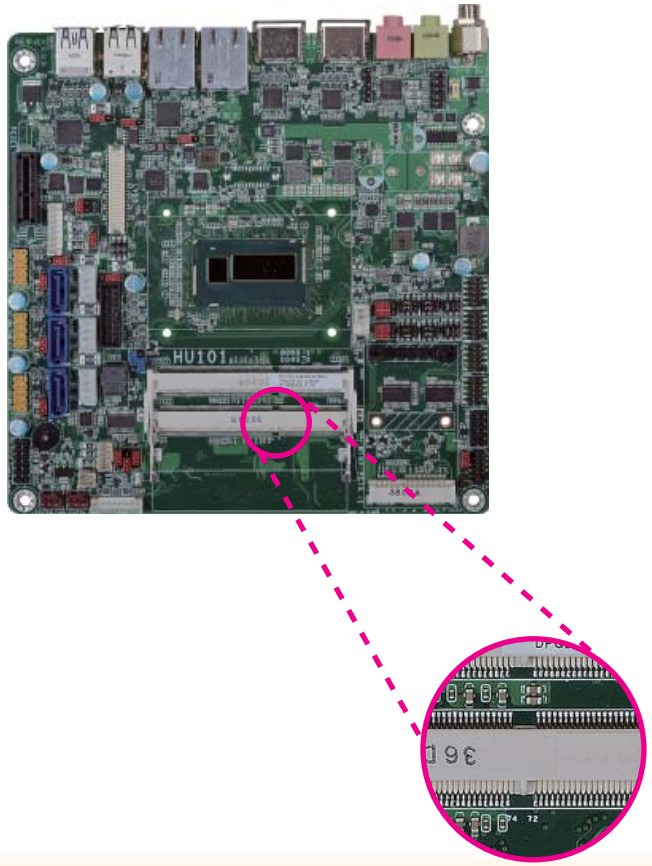
Data will be accessed in chunks of 128 bits from the memory channels. Dual channel provides better system performance because it doubles the data transfer rate.

Single Channel	DIMMs are on the same channel. DIMMs in a channel can be identical or completely different. However, we highly recommend using identical DIMMs. Not all slots need to be populated.
Dual Channel	DIMMs of the same memory configuration are on different channels.

Installing the DIMM Module

Note:
The system board used in the following illustrations may not resemble the actual board. These illustrations are for reference only.

1. Make sure the PC and all other peripheral devices connected to it has been powered down.
2. Disconnect all power cords and cables.
3. Locate the SODIMM socket on the system board.
4. Note the key on the socket. The key ensures the module can be plugged into the socket in only one direction.

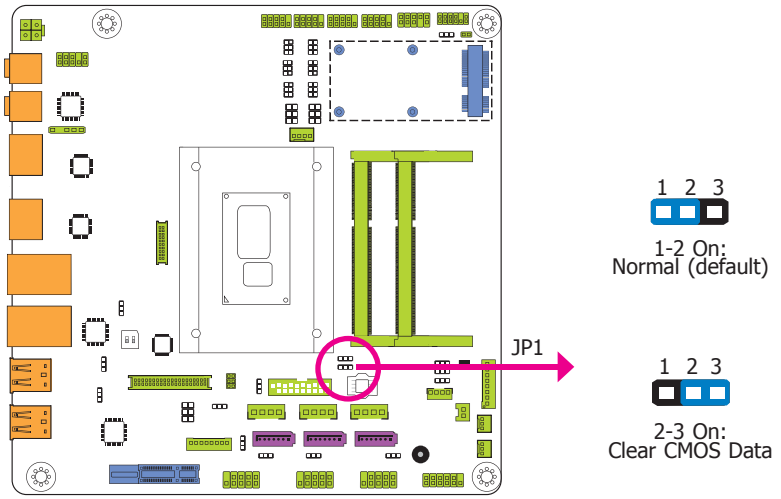


5. Grasping the module by its edges, align the module into the socket at an approximately 30 degrees angle. Apply firm even pressure to each end of the module until it slips down into the socket. The contact fingers on the edge of the module will almost completely disappear inside the socket.

6. Push down the module until the clips at each end of the socket lock into position. You will hear a distinctive "click", indicating the module is correctly locked into position.

Jumper Settings

Clear CMOS Data



If you encounter the following,

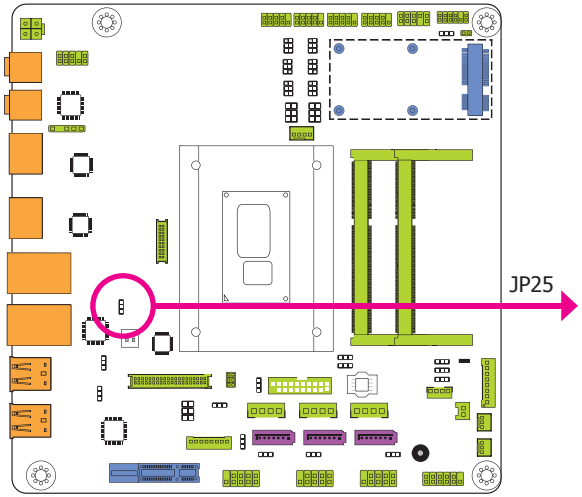
a) CMOS data becomes corrupted.
b) You forgot the supervisor or user password.

you can reconfigure the system with the default values stored in the ROM BIOS.

To load the default values stored in the ROM BIOS, please follow the steps below.

1. Power-off the system and unplug the power cord.
2. Set JP1 pins 2 and 3 to On. Wait for a few seconds and set JP1 back to its default setting, pins 1 and 2 On.
3. Now plug the power cord and power-on the system.

Auto Power-on Select



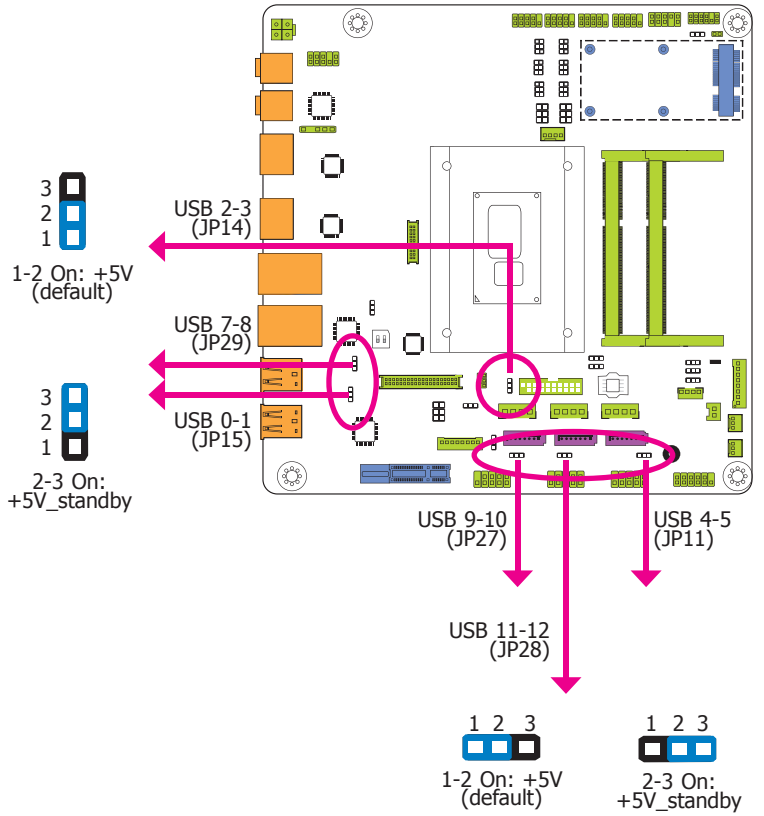
3
2
1
1-2 On:
Power-on via power button
(default)

3
2
1
2-3 On:
Power-on via AC power

JP25 is used to select the method of powering on the system. If you want the system to power-on whenever AC power comes in, set JP25 pins 2 and 3 to On. If you want to use the power button, set pins 1 and 2 to On.

When using the JP25 "Power On" feature to power the system back on after a power failure occurs, the system may not power on if the power lost is resumed within 5 seconds (power flicker).

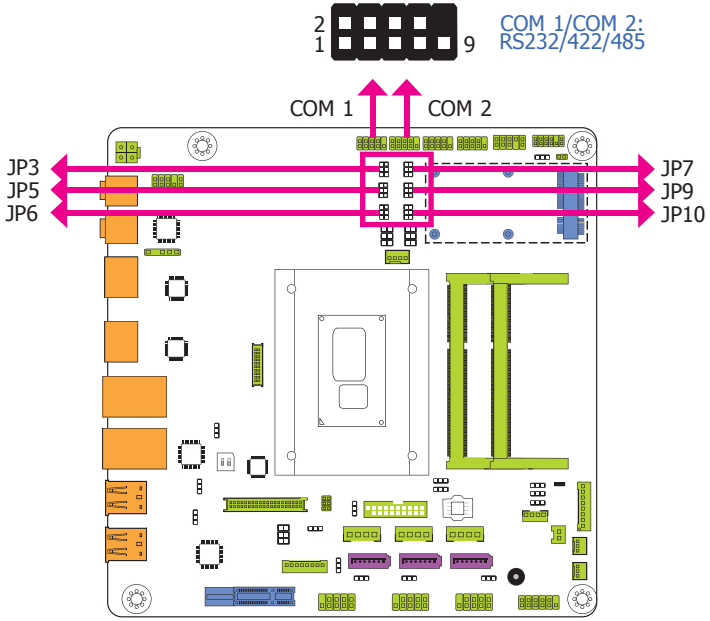
USB Power Select

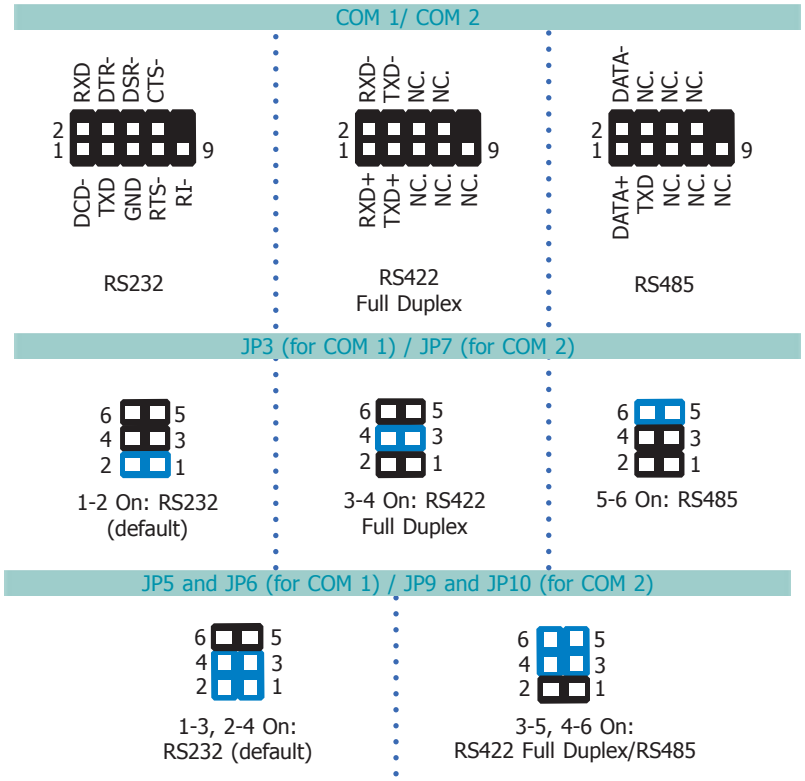


JP11, JP14, JP15, JP27, JP28 and JP29 are used to select the power of the USB ports. Selecting +5V_standby will allow you to use a USB device to wake up the system.

Important:
If you are using the Wake-On-USB Keyboard/Mouse function for 2 USB ports, the +5V_standby power source of your power supply must support ≥1.5A. For 3 or more USB ports, the +5V_standby power source of your power supply must support ≥2A.

COM 1/COM 2 RS232/422/485 Select

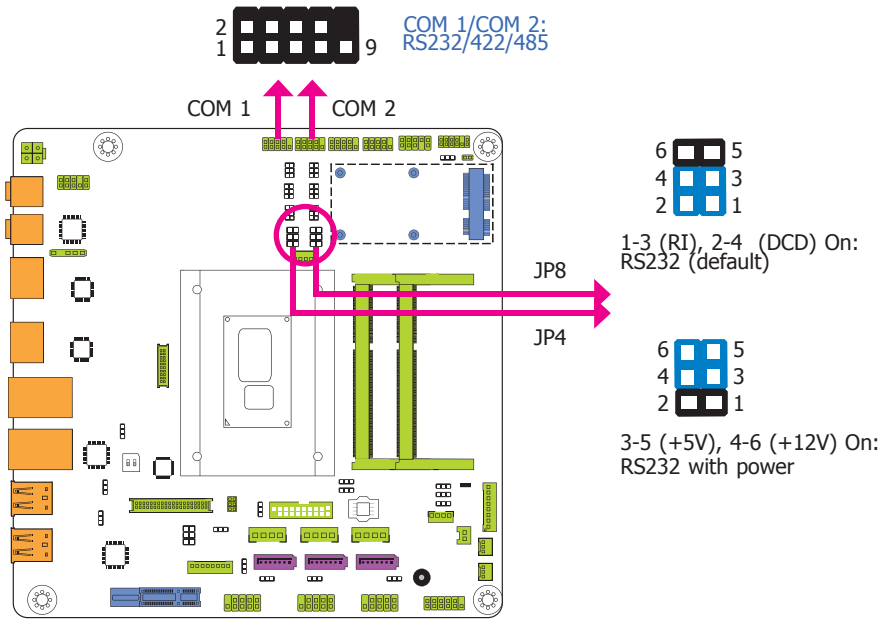




These jumpers allow you to configure the Serial COM ports to RS232, RS422 (Full Duplex) or RS485. JP3, JP5 and JP6 are used to configure the Serial COM port 1. JP7, JP9 and JP10 are used to configure the Serial COM port 2. The pin functions of Serial COM port 1 and COM port 2 will vary according to these jumpers' setting.

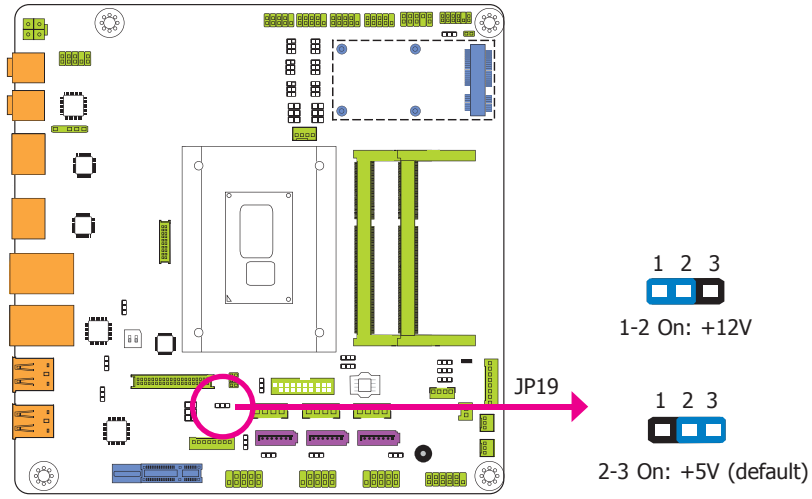
Note:
When COM 1 RS232/422/485 is selected, JP5 and JP6 must be set in accordance to JP3. And when COM 2 RS232/422/485 is selected, JP9 and JP10 must be set in accordante to JP7.

COM 1/COM 2 RS232/Power Select



JP4 (for COM 1) and JP8 (for COM 2) are designed to configure the Serial COM ports to pure RS232 or RS232 with power.

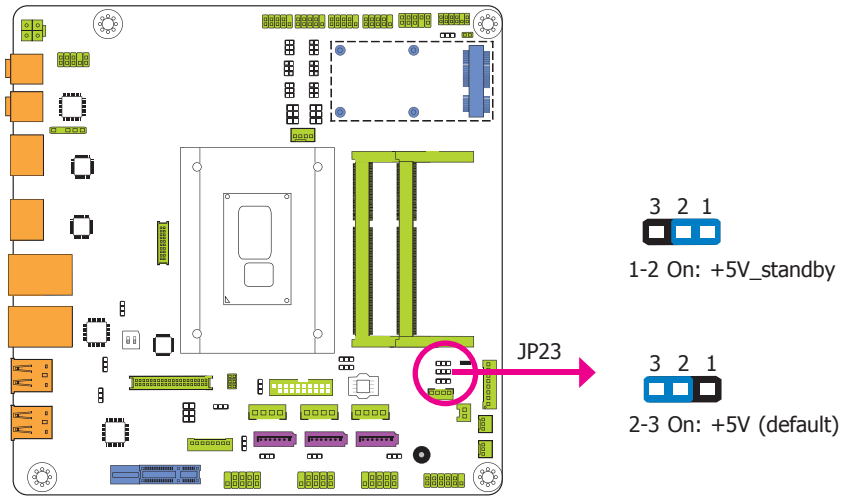
Backlight Power Select



JP19 is used to select the power level of backlight control: +5V (default) or +12V.

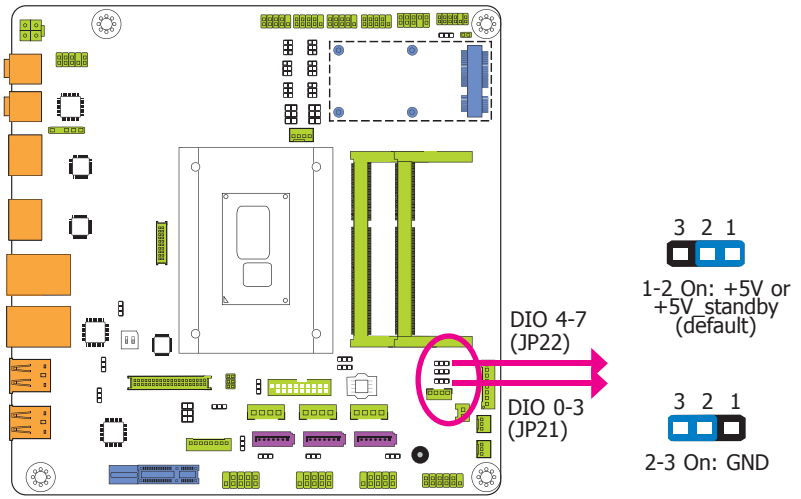
Important:
Before powering-on the system, make sure that the power settings of JP19 match the power specification of backlight control. Selecting the incorrect voltage will seriously damage the backlight.

Digital I/O Power Select



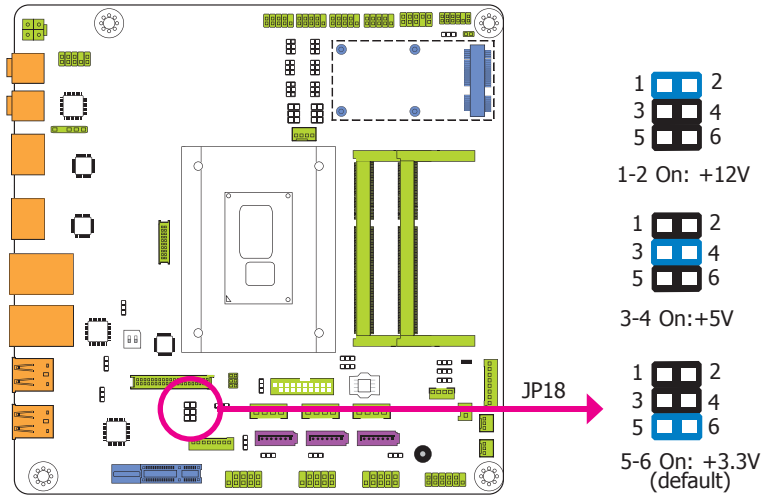
JP23 is used to select the power of DIO (Digital I/O) signal.

Digital I/O Output State



Based on the power level of DIO (Digital I/O) selected on JP23, JP21 (DIO pin 0-3) and JP22 (DIO pin 4-7) are used to select the state of DIO output: pull high or pull low. When selecting pull high, the power selection will be the same as JP23's setting.

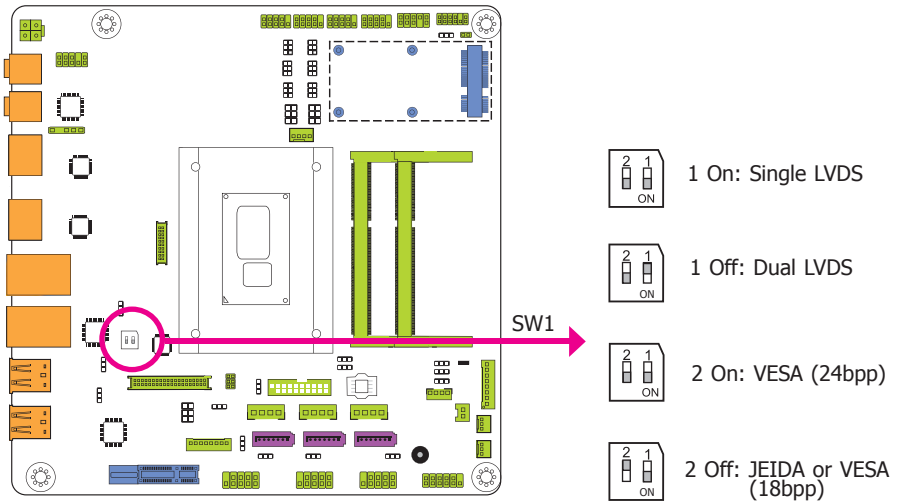
Panel Power Select



JP18 is used to select the power supplied with the LVDS LCD panel.

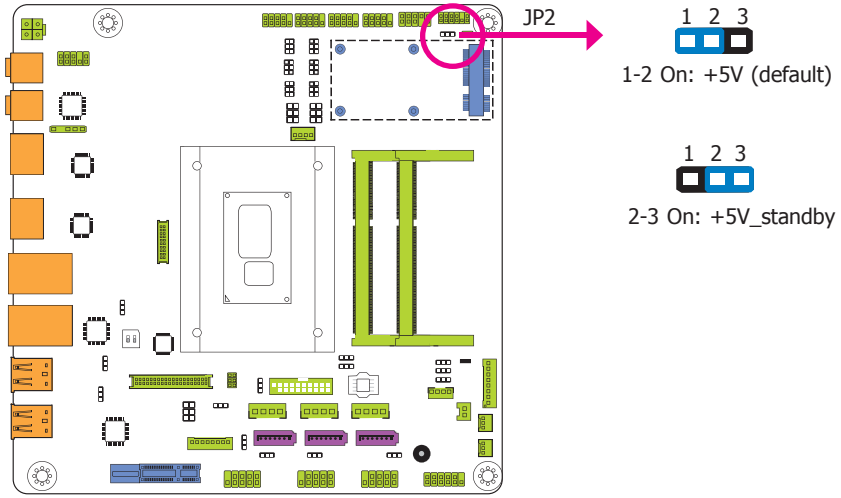
Important:
Before powering-on the system, make sure that the power settings of JP18 match the LCD panel's specification. Selecting the incorrect voltage will seriously damage the LCD panel.

LVDS Channel and bpp Select



Switch 1 allows you to select the LVDS channel and the color of bits per pixel.

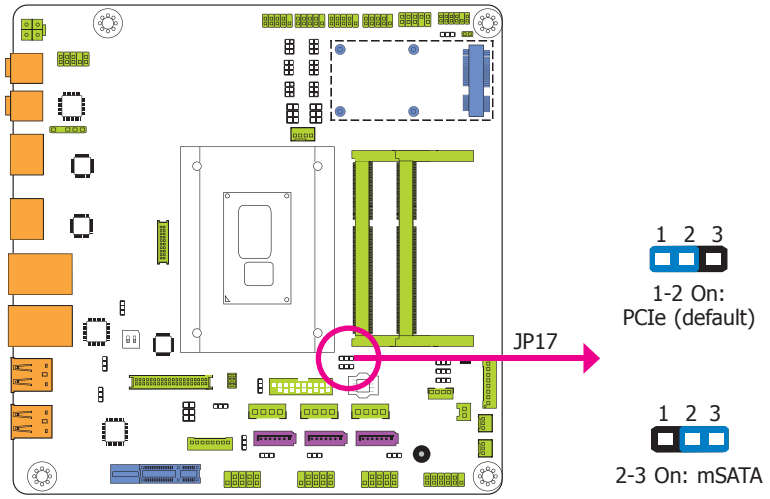
PS/2 Keyboard/Mouse Power Select



JP2 is used to select the power of the PS/2 keyboard/mouse port. Selecting +5V_standby will allow you to use the PS/2 keyboard or PS/2 mouse to wake up the system.

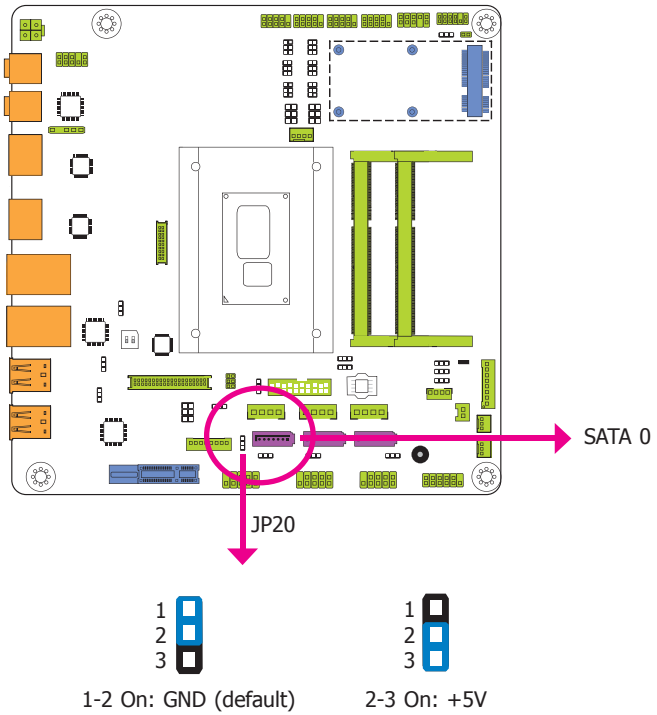
Important:
The +5V_standby power source of your power supply must support ≥720mA.

Mini PCIe Signal Select



JP17 is used to select the Mini PCIe signal: PCIe or mSATA.

SATA DOM Power Select



JP20 is used to select the power level of SATA DOM.

Note:
SATA port 0 provides adequate space for SATA DOM.

Rear Panel I/O Ports

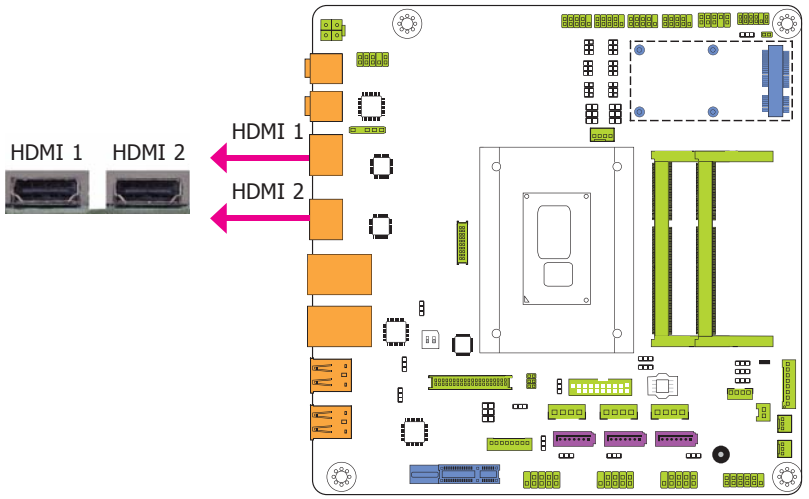
The rear panel I/O ports consist of the following:

- 2 HDMI ports
- 2 RJ45 LAN ports
- 2 USB 2.0 ports
- 2 USB 3.0 ports
- 1 Mic-in jack
- 1 Line-out jack

Graphics Interfaces

The display ports consist of the following:

- 2 HDMI ports



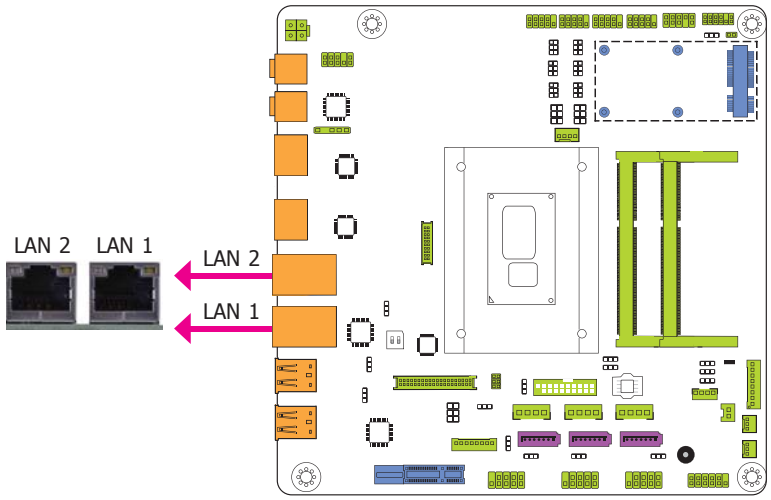
HDMI Port

The HDMI port which carries both digital audio and video signals is used to connect a LCD monitor or digital TV that has the HDMI port.

Driver Installation

Install the graphics driver. Refer to chapter 4 for more information.

RJ45 LAN Ports



Features

- Intel® I210 PCI Express Gigabit Ethernet controller
- Intel® I218 with iAMT9.5 Gigabit Ethernet Phy

The LAN ports allow the system board to connect to a local area network by means of a network hub.

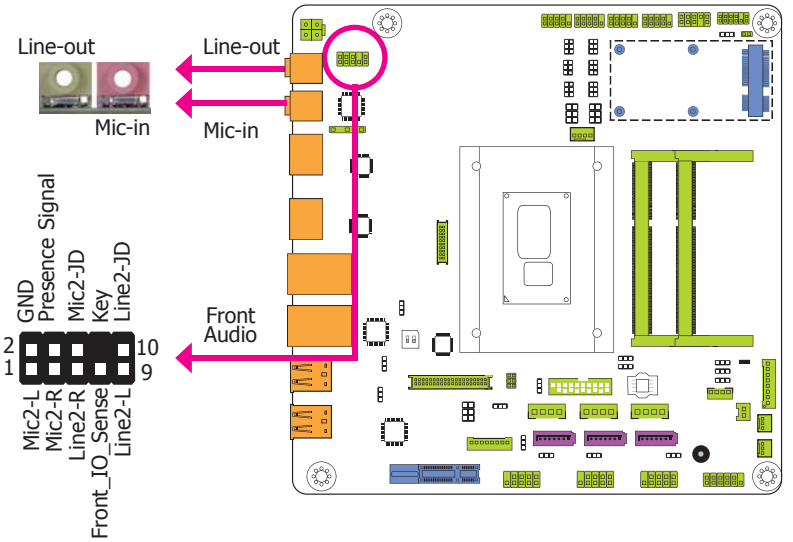
BIOS Setting

Configure the onboard LAN in the Chipset menu ("PCH-IO Configuration" submenu) of the BIOS. Refer to chapter 3 for more information.

Driver Installation

Install the LAN drivers. Refer to chapter 4 for more information.

Audio



Rear Audio

The system board is equipped with 2 audio jacks. A jack is a one-hole connecting interface for inserting a plug.

- Line-out Jack (Lime)
  This jack is used to connect a headphone or external speakers.

- Mic-in (Pink)
  This jack is used to connect an external microphone.

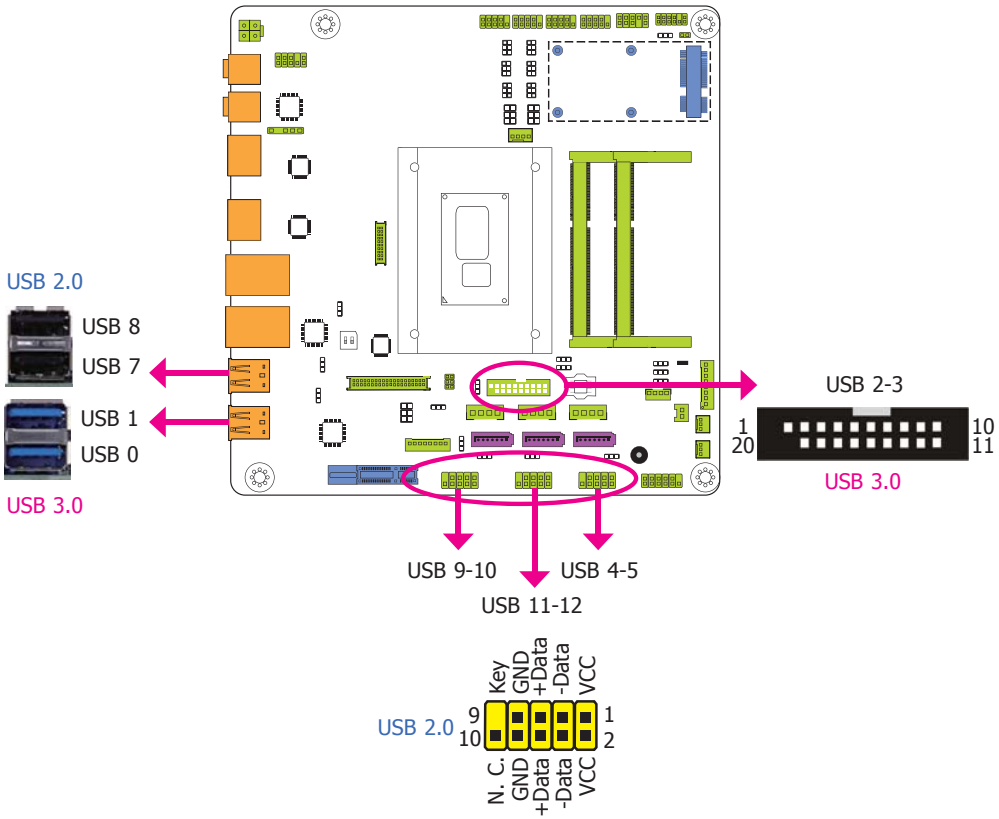
Front Audio

The front audio connector allows you to connect to the second line-out and mic-in jacks that are at the front panel of your system.

Driver Installation

Install the audio driver. Refer to the chapter 4 for more information.

USB Ports



The USB device allows data exchange between your computer and a wide range of simultaneously accessible external Plug and Play peripherals.

The system board is equipped with two onboard USB 3.0 ports (USB 0-1) and two onboard USB 2.0 ports (USB 7-8). The 10-pin connectors allow you to connect 6 additional USB 2.0 ports (USB 4-5/9-10/11-12). The 20-pin connector is designed to connect 2 ddditional USB 3.0 ports (USB 2-3). The additional USB ports may be mounted on a card-edge bracket. Install the card-edge bracket to an available slot at the rear of the system chassis and then insert the USB port cables to a connector. The table listed on the right side is the pin functions of the USB 2-3 ports.

USB 2-3 Port

Pins	Pin Assignment	Pins	Pin Assignment
1	USB3.0_PW3-4 (5V/5VSB)	2	USB3_RX3_N_A
3	USB3_RX3_P_A	4	GND
5	USB3_TX3_N_A	6	USB3_TX3_P_A
7	GND	8	SBD2-
9	SBD2+	10	NC
11	SBD3+	12	SBD3-
13	GND	14	USB3_TX4_P_A
15	USB3_TX4_N_A	16	GND
17	USB3_RX4_P_A	18	USB3_RX4_N_A
19	USB3.0_PW3-4 (5V/5VSB)		

BIOS Setting

Configure the onboard USB in the Advanced menu ("USB Configuration" submenu) of the BIOS. Refer to chapter 3 for more information.

Driver Installation

You may need to install the proper drivers in your operating system to use the USB device. Refer to your operating system's manual or documentation for more information.

Wake-On-USB Keyboard/Mouse

The Wake-On-USB Keyboard/Mouse function allows you to use a USB keyboard or USB mouse to wake up a system from the S3 (STR - Suspend To RAM) state. To use this function:

- **Jumper Setting**

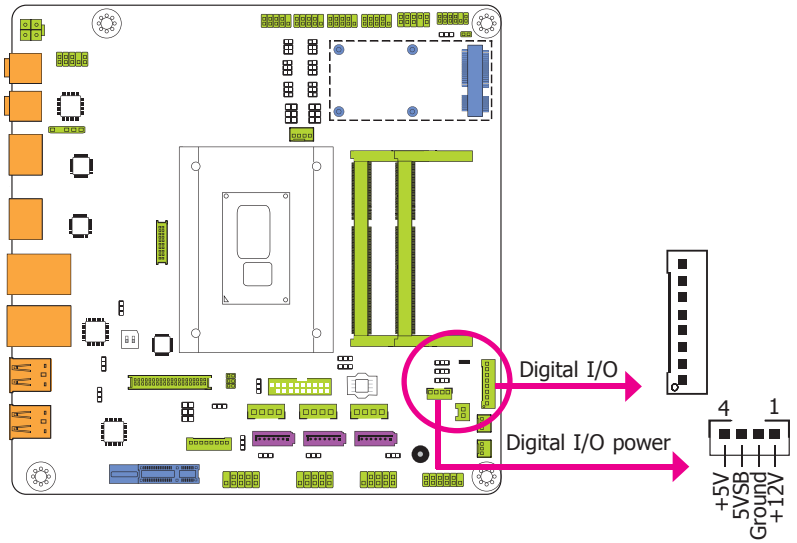
JP11, JP14, JP15, JP27, JP28 and JP29 must be set to "2-3 On: +5V_standby". Refer to "USB Power Select" in this chapter for more information.

Important:
If you are using the Wake-On-USB Keyboard/Mouse function for 2 USB ports, the +5V_standby power source of your power supply must support ≥1.5A. For 3 or more USB ports, the +5V_standby power source of your power supply must support ≥2A.

I/O Connectors

Digital I/O Connector

Digital I/O Power Connector

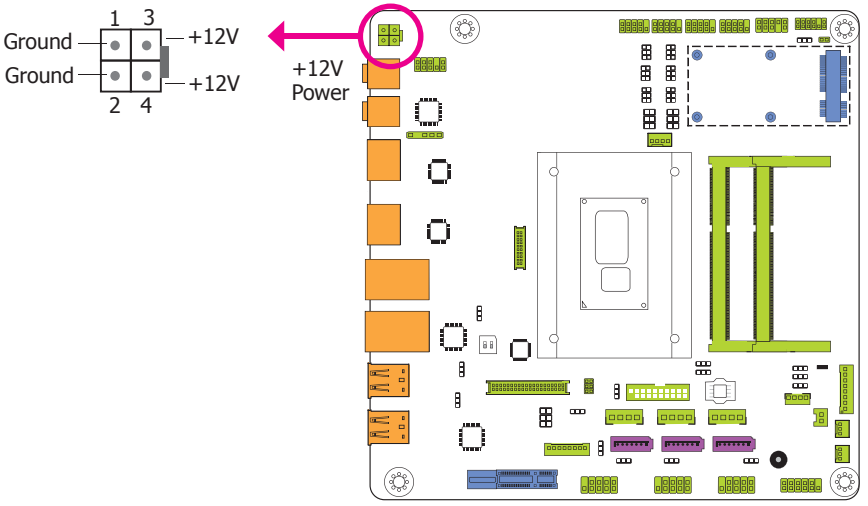


The 8-bit Digital I/O connector provides powering-on function to external devices that are connected to the connector.

Digital I/O Connector

Pins	Function
0	DIO7
1	DIO6
2	DIO5
3	DIO4
4	DIO3
5	DIO2
6	DIO1
7	DIO0

Power Connector



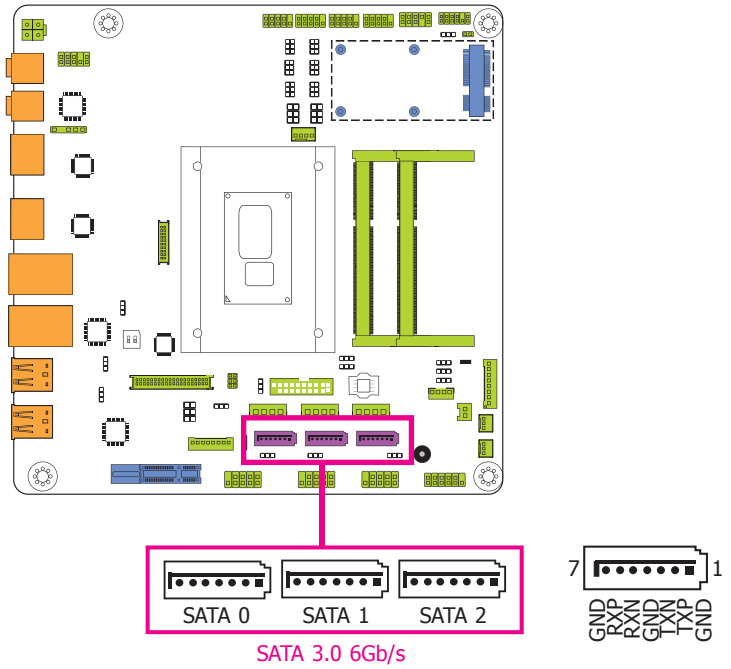
Use a power supply that complies with the +12V Power Supply Design Guide Version 1.1. The 4-pin +12V power connector enables the delivery of +12VDC current to the processor's Voltage Regulator Module (VRM).

The power connector from the power supply unit is designed to fit the 4-pin connector in only one orientation. Make sure to find the proper orientation before plugging the connector.

The system board requires a minimum of 300 Watt power supply to operate. Your system configuration (CPU power, amount of memory, add-in cards, peripherals, etc.) may exceed the minimum power requirement. To ensure that adequate power is provided, we strongly recommend that you use a minimum of 400 Watt (or greater) power supply.

Important:
Insufficient power supplied to the system may result in instability or the add-in boards and peripherals not functioning properly. Calculating the system's approximate power usage is important to ensure that the power supply meets the system's consumption requirements.

SATA (Serial ATA) Connectors



Features

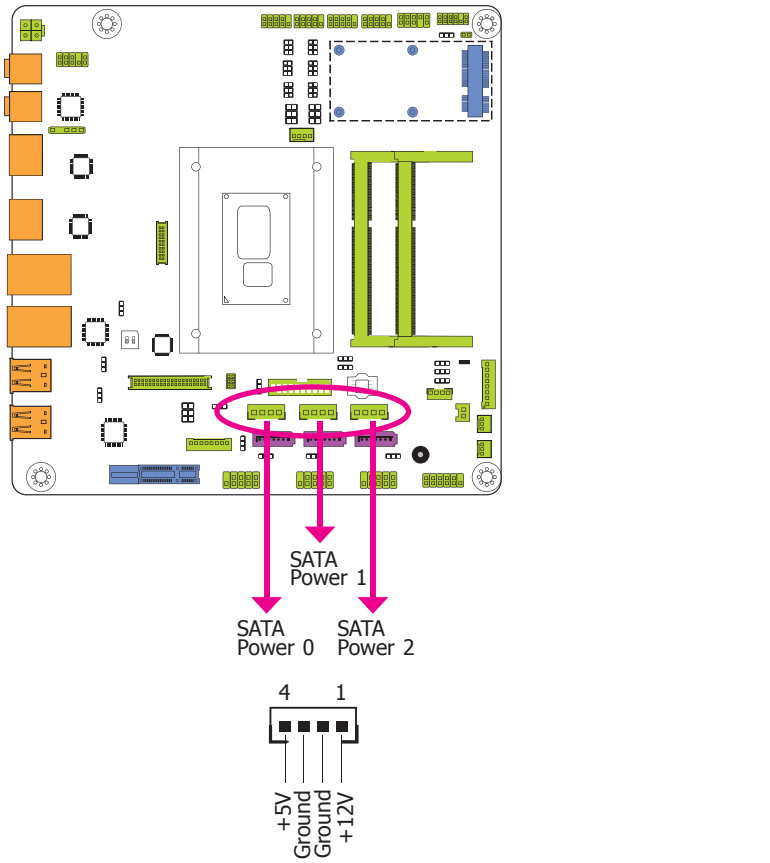
- 3 Serial ATA 3.0 ports with data transfer rate up to 6Gb/s
- SATA port 0 provides adequate space for SATA DOM
- Integrated Advanced Host Controller Interface (AHCI) controller
- Supports RAID 0/1/5
- Supports Intel® Smart Response Technology

The Serial ATA connectors are used to connect Serial ATA devices. Connect one end of the Serial ATA data cable to a SATA connector and the other end to your Serial ATA device.

BIOS Setting

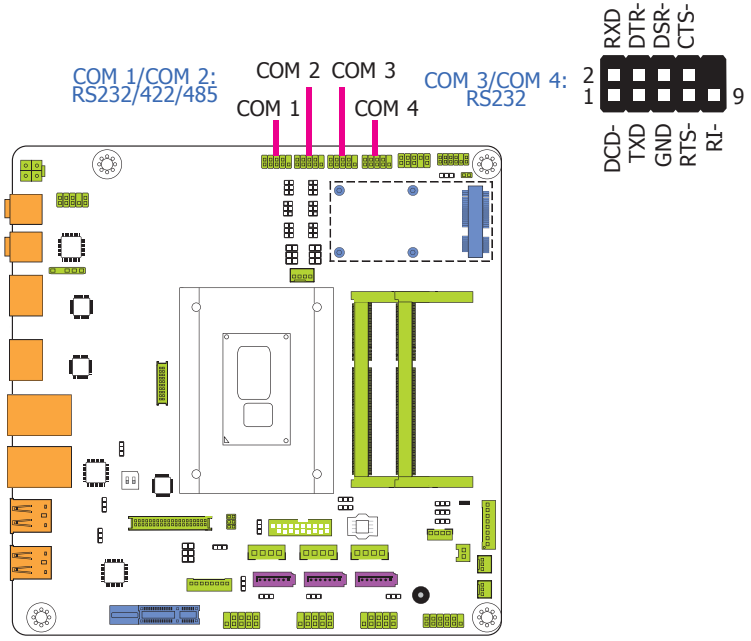
Configure the Serial ATA drives in the Advanced menu ("SATA Configuration" submenu) of the BIOS. Refer to chapter 3 for more information.

SATA (Serial ATA) Power Connectors



These SATA power connectors supply power to the SATA drive. Connect one end of the provided power cable to the SATA power connector and the other end to your storage device.

COM (Serial) Ports



COM 3 and COM 4 are fixed at RS232.

The pin functions of COM 1 and COM 2 ports will vary according to jumpers' setting. JP3, JP5 and JP6 are used to configure the Serial COM port 1. JP7, JP9 and JP10 are used to configure the Serial COM port 2. JP4 (for COM 1) and JP8 (for COM 2) are used to configure Serial COM ports to pure RS232 or RS232 with power. Refer to "COM 1/COM 2 RS232/RS422/RS485 Select" and "COM 1/COM 2 RS232/Power Select" in this chapter for more information.

The serial ports are asynchronous communication ports with 16C550A-compatible UARTs that can be used with modems, serial printers, remote display terminals, and other serial devices.

Connecting External Serial Ports

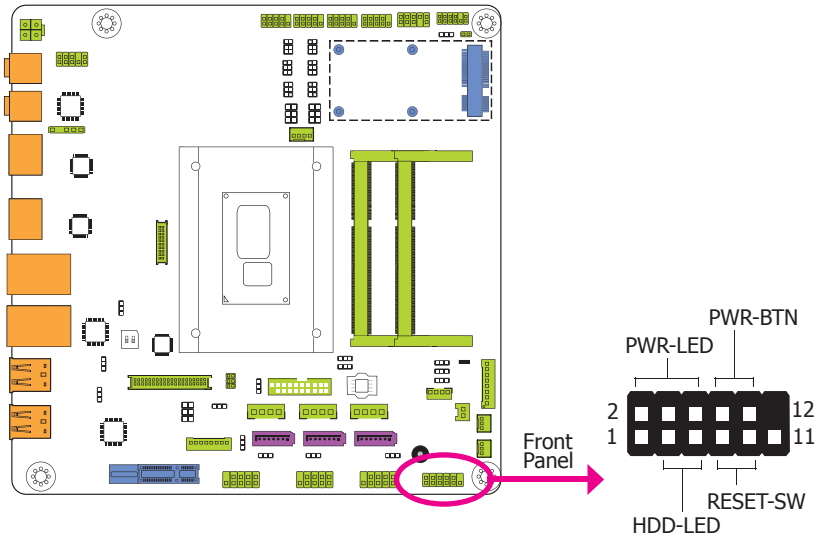
Your COM port may come mounted on a card-edge bracket. Install the card-edge bracket to an available slot at the rear of the system chassis then insert the serial port cable to the COM connector. Make sure the colored stripe on the ribbon cable is aligned with pin 1 of the COM connector.

BIOS Setting

Configure the serial COM ports in the Advanced menu ("Super IO Configuration" submenu) of the BIOS. Refer to the chapter 3 for more information.

Note:
When COM 1 RS232/422/485 is selected, JP5 and JP6 must be set in accordance to JP3. And when COM 2 RS232/422/485 is selected, JP9 and JP10 must be set in accordante to JP7.

Front Panel Connector



HDD-LED - HDD LED

This LED will light when the hard drive is being accessed.

RESET-SW - Reset Switch

This switch allows you to reboot without having to power off the system.

PWR-BTN - Power Switch

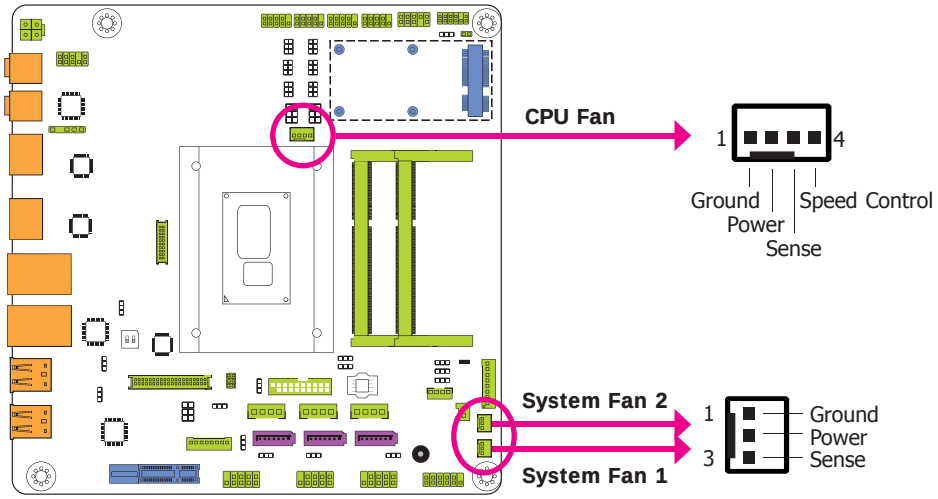
This switch is used to power on or off the system.

PWR-LED - Power/Standby LED

When the system's power is on, this LED will light. When the system is in the S1 (POS - Power On Suspend) state, it will blink every second. When the system is in the S3 (STR - Suspend To RAM) state, it will blink every 4 seconds.

	Pin	Pin Assignment		Pin	Pin Assignment
HDD-LED	3	HDD Power	PWR-LED	2	LED Power
	5	Signal		4	LED Power
RESET-SW	7	Ground		6	Signal
	9	RST Signal	PWR-BTN	8	Ground
	11	N.C.		10	Signal

Cooling Fan Connectors



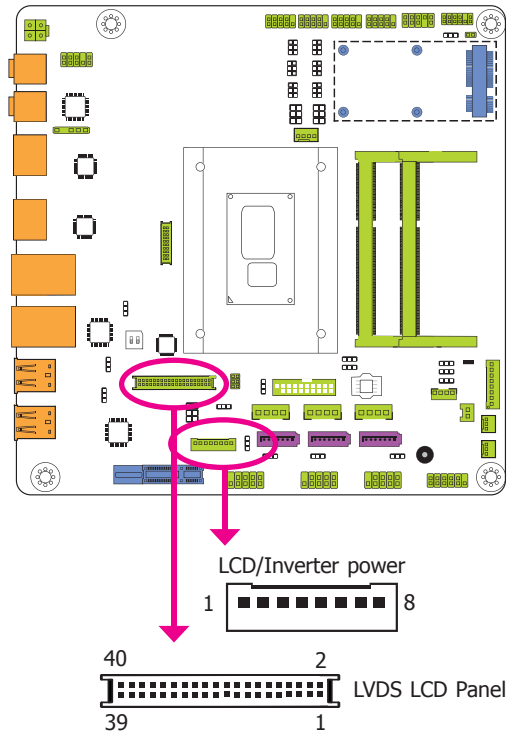
The fan connectors are used to connect cooling fans. The cooling fans will provide adequate airflow throughout the chassis to prevent overheating the CPU and system board components.

BIOS Setting

The Advanced menu ("NCT6106D HW Monitor" submenu) of the BIOS will display the current speed of the cooling fans. Refer to chapter 3 for more information.

LVDS LCD Panel Connector

LCD / Inverter Power Connector



The system board allows you to connect a LCD Display Panel by means of the LVDS LCD panel connector and the LCD/Inverter power connector. These connectors transmit video signals and power from the system board to the LCD Display Panel.

Refer to the right side for the pin functions of these connectors.

BIOS Setting

Configure the LCD panel in the Advanced/Chipset Features submenu of the BIOS. Refer to chapter 3 for more information.

Note:
DFI board's LVDS connector: Hirose DF13-40DP-1.25V(91)/40P/1.25mm; cable side connector: Hirose DF13-40DS-1.25C.

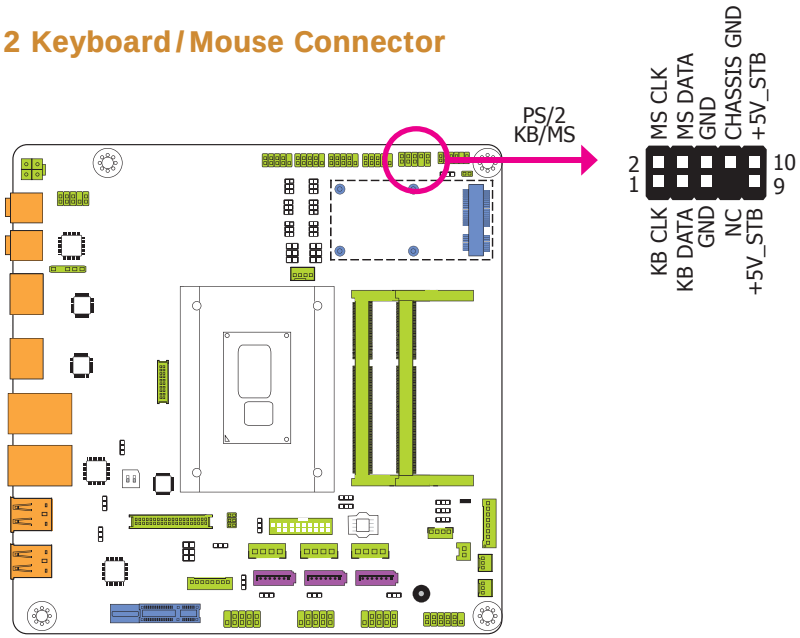
LVDS LCD Panel Connector

Pins	Function	Pins	Function
1	GND	2	GND
3	LVDS_Out3+	4	LVDS_Out7+
5	LVDS_Out3-	6	LVDS_Out7-
7	GND	8	GND
9	LVDS_Out2+	10	LVDS_Out6+
11	LVDS_Out2-	12	LVDS_Out6-
13	GND	14	GND
15	LVDS_Out1+	16	LVDS_Out5+
17	LVDS_Out1-	18	LVDS_Out5-
19	GND	20	GND
21	LVDS_Out0+	22	LVDS_Out4+
23	LVDS_Out0-	24	LVDS_Out4-
25	GND	26	GND
27	LVDS_CLK1+	28	LVDS_CLK2+
29	LVDS_CLK1-	30	LVDS_CLK2-
31	GND	32	GND
33	LVDS_DDCCLK	34	N.C.
35	LVDS_DDCDTA	36	+3.3V
37	Panel Power	38	Panel Power
39	Panel Power	40	Panel Power

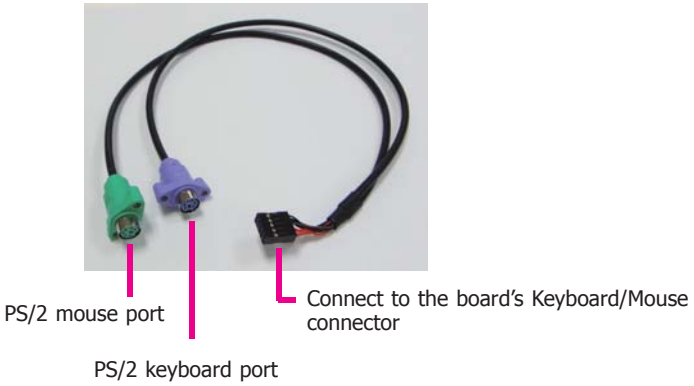
LCD / Inverter Power Connector

Pins	Function
1	GND
2	GND
3	Panel Inverter Brightness Voltage Control
4	Panel Power
5	+3.3V
6	Panel Backlight On/Off Control
7	+12V
8	+12V

PS/2 Keyboard/Mouse Connector



The Keyboard/Mouse connector is used to connect PS/2 keyboard and PS/2 mouse by means of a PS/2 cable. Connect one end of the cable to the Keyboard/Mouse connector. The other ends are used to connect a PS/2 keyboard and a PS/2 mouse.



Wake-On-PS/2 Keyboard/Mouse

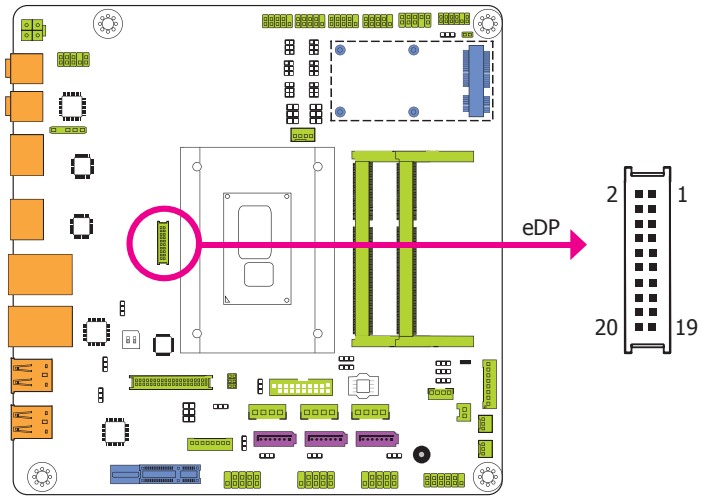
The Wake-On-PS/2 Keyboard/Mouse function allows you to use the PS/2 keyboard or PS/2 mouse to power-on the system. To use this function:

- **Jumper Setting**

JP2 must be set to "2-3 On: 5V_standby". Refer to "PS/2 Keyboard/Mouse Power Select" in this chapter for more information.

Important:
The 5V_standby power source of your power supply must support ≥720mA.

eDP Connector (optional)



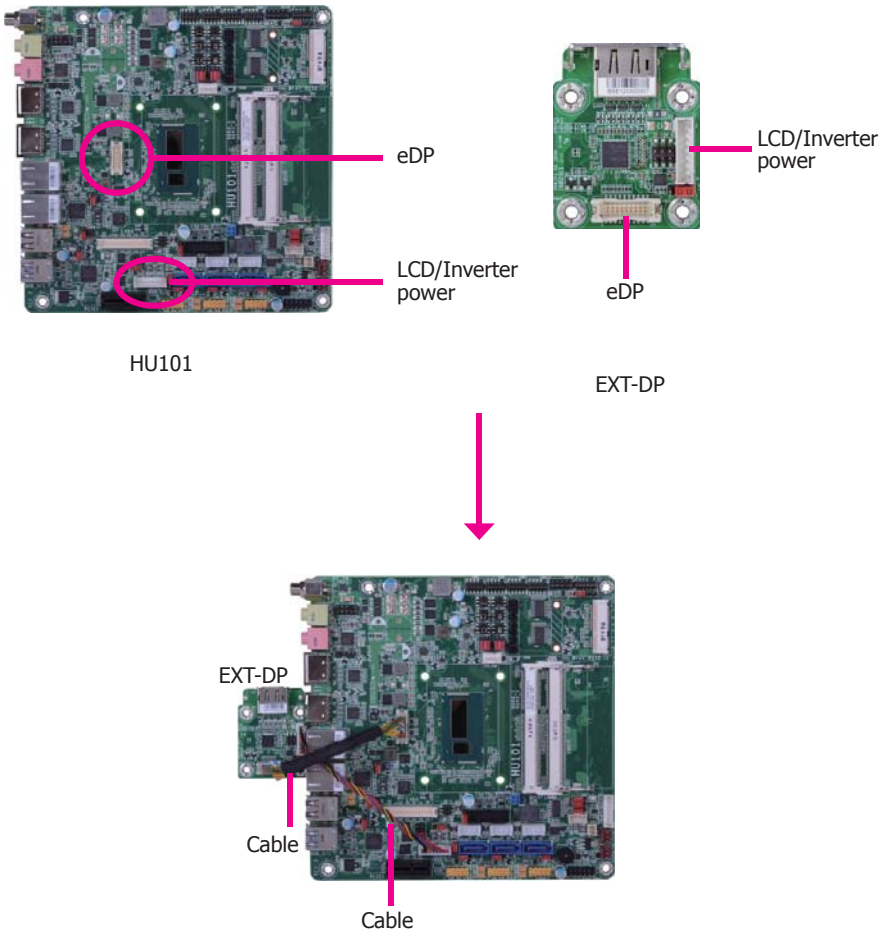
The eDP connector is an embedded displayport which has advanced power-saving features to connect a display device to transmit digital communication of audio and video signals. The table below indicates the pin fuctions of the eDP connector.

Pins	Pin Assignment	Pins	Pin Assignment
1	DP_OUT1N	2	DP_OUT2N
3	DP_OUT1P	4	DP_OUT2P
5	GND1	6	GND4
7	DP_OUT0P	8	DP_OUT3N
9	DP_OUT0N	10	DP_OUT3P
11	GND2	12	GND5
13	DP_AUXP	14	DP_CLK
15	DP_AUXN	16	DP_DATA
17	GND3	18	GND6
19	DP_HPD	20	POWER2

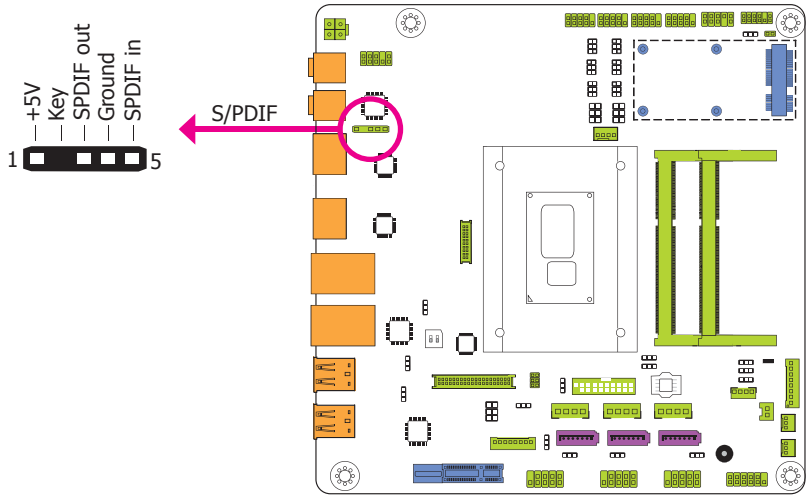
Connecting the EXT-DP Card to the HU101 Motherboard

Note:
The system board used in the following illustrations may not resemble the actual one. These illustrations are for reference only.

The EXT-DP card is connected to the HU101 motherboard via two cables. The photos below illustrates how to connect the extension module to the motherboard.

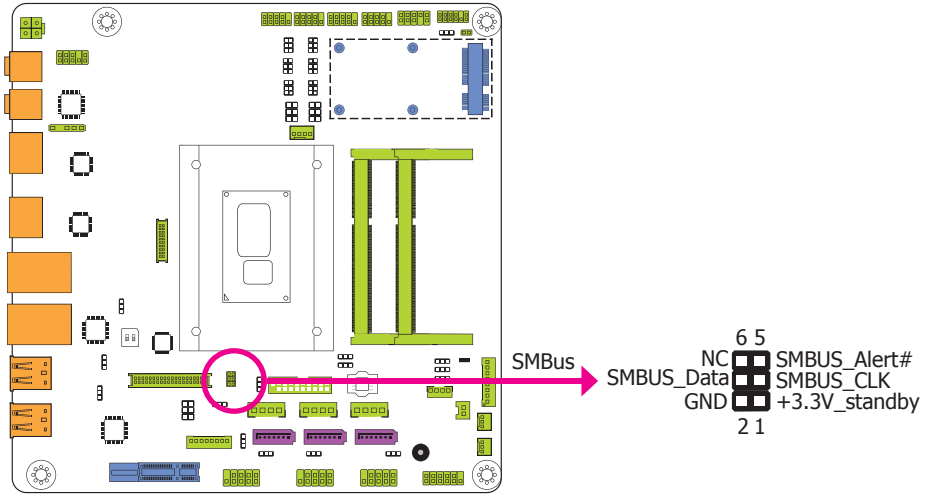


S/PDIF Connector



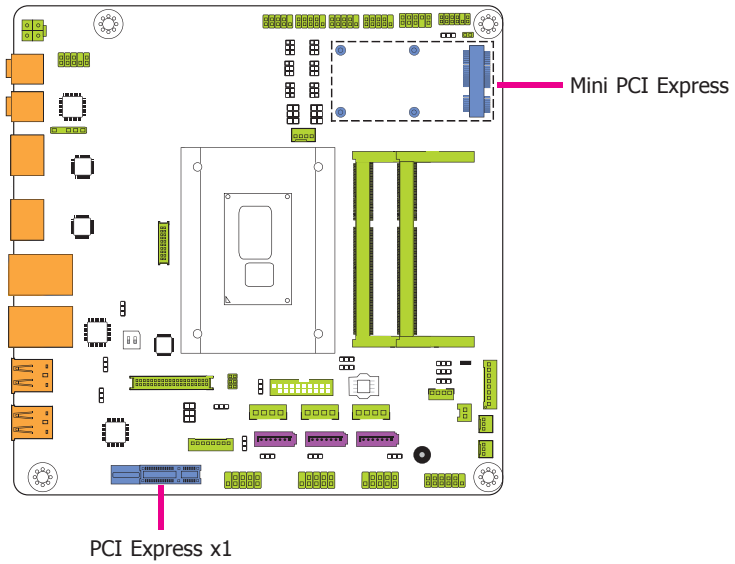
The S/PDIF connector is used to connect an external S/PDIF port. Your S/PDIF port may be mounted on a card-edge bracket. Install the card-edge bracket to an available slot at the rear of the system chassis then connect the audio cable to the S/PDIF connector. Make sure pin 1 of the audio cable is aligned with pin 1 of the S/PDIF connector.

SMBus Connector



The SMBus (System Management Bus) connector is used to connect SMBus devices. It is a multiple device bus that allows multiple chips to connect to the same bus and enable each one to act as a master by initiating data transfer.

Expansion Slots



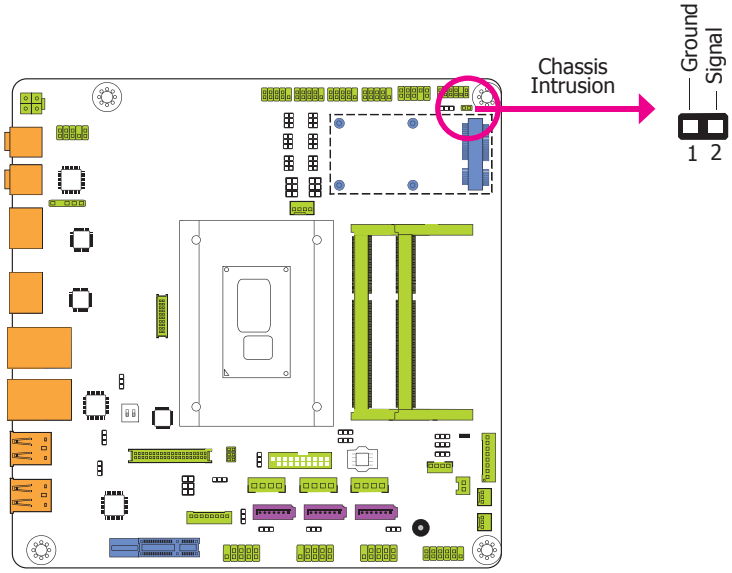
PCI Express x1 Slot

Install PCI Express cards such as network cards or other cards that comply to the PCI Express specifications into the PCI Express x1 slot.

Mini PCI Express Slot

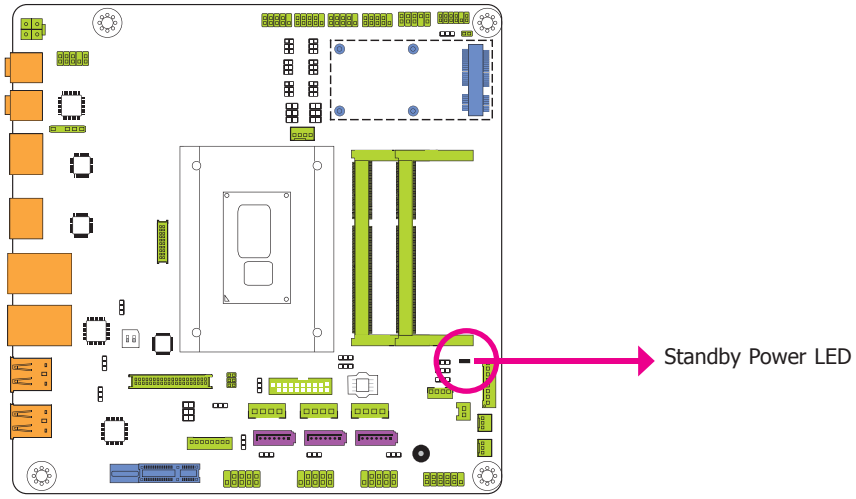
The Mini PCIe socket is used to install a Mini PCIe card. Mini PCIe card is a small form factor PCI card with the same signal protocol, electrical definitions, and configuration definitions as the conventional PCI.

Chassis Intrusion Connector



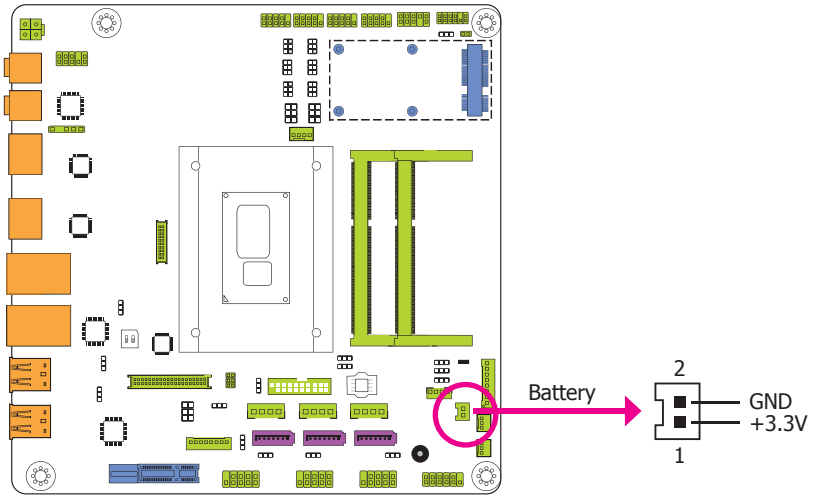
The board supports the chassis intrusion detection function. Connect the chassis intrusion sensor cable from the chassis to this connector. When the system's power is on and a chassis intrusion occurred, an alarm will sound. When the system's power is off and a chassis intrusion occurred, the alarm will sound only when the system restarts.

Standby Power LED



This LED will lit red when the system is in the standby mode. It indicates that there is power on the system board. Power-off the PC and then unplug the power cord prior to installing any devices. Failure to do so will cause severe damage to the motherboard and components.

Battery



The lithium ion battery powers the real-time clock and CMOS memory. It is an auxiliary source of power when the main power is shut off.

Safety Measures

- Danger of explosion if battery incorrectly replaced.
- Replace only with the same or equivalent type recommend by the manufacturer.
- Dispose of used batteries according to local ordinance.

Chapter 3 - BIOS Setup

Overview

The BIOS is a program that takes care of the basic level of communication between the CPU and peripherals. It contains codes for various advanced features found in this system board. The BIOS allows you to configure the system and save the configuration in a battery-backed CMOS so that the data retains even when the power is off. In general, the information stored in the CMOS RAM of the EEPROM will stay unchanged unless a configuration change has been made such as a hard drive replaced or a device added.

It is possible that the CMOS battery will fail causing CMOS data loss. If this happens, you need to install a new CMOS battery and reconfigure the BIOS settings.

Note:
The BIOS is constantly updated to improve the performance of the system board; therefore the BIOS screens in this chapter may not appear the same as the actual one. These screens are for reference purpose only.

Default Configuration

Most of the configuration settings are either predefined according to the Load Optimal Defaults settings which are stored in the BIOS or are automatically detected and configured without requiring any actions. There are a few settings that you may need to change depending on your system configuration.

Entering the BIOS Setup Utility

The BIOS Setup Utility can only be operated from the keyboard and all commands are keyboard commands. The commands are available at the right side of each setup screen.

The BIOS Setup Utility does not require an operating system to run. After you power up the system, the BIOS message appears on the screen and the memory count begins. After the memory test, the message “Press DEL to run setup” will appear on the screen. If the message disappears before you respond, restart the system or press the “Reset” button. You may also restart the system by pressing the <Ctrl> <Alt> and <Del> keys simultaneously.

Legends

Keys	Function
Right and Left arrows	Moves the highlight left or right to select a menu.
Up and Down arrows	Moves the hightlight up or down between submenu or fields.
<Esc>	Exit to the BIOS Setup Utility.
+ (plus key)	Scrolls forward through the values or options of the highlighted field.
- (minus key)	Scrolls backward through the values or options of the highlighted field.
Tab	Select a field.
<F1>	Displays general help
<F2>	Pervious values
<F3>	Optimized defaults
<F4>	Saves and resets the setup program.
<Enter>	Press <Enter> to enter the highlighted submenu.

Scroll Bar

When a scroll bar appears to the right of the setup screen, it indicates that there are more available fields not shown on the screen. Use the up and down arrow keys to scroll through all the available fields.

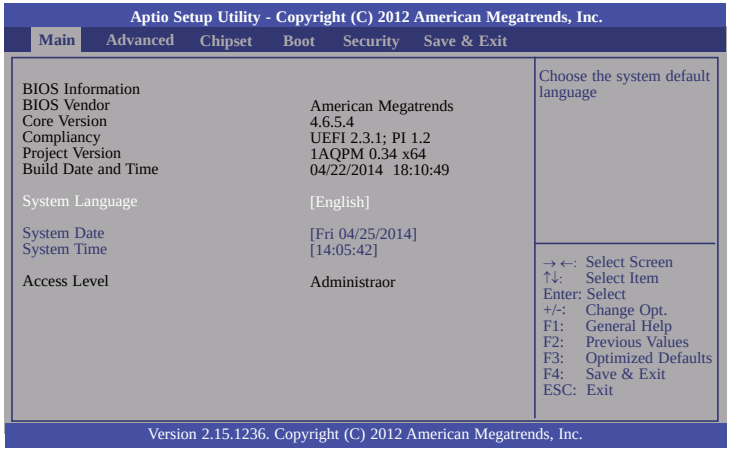
Submenu

When “▶“ appears on the left of a particular field, it indicates that a submenu which contains additional options are available for that field. To display the submenu, move the highlight to that field and press <Enter>.

AMI BIOS Setup Utility

Main

The Main menu is the first screen that you will see when you enter the BIOS Setup Utility.


Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
BIOS Information
BIOS Vendor American Megatrends
Core Version 4.6.5.4
Compliancy UEFI 2.3.1; PI 1.2
Project Version 1AQPM 0.34 x64
Build Date and Time 04/22/2014 18:10:49
System Language [English]
System Date [Fri 04/25/2014]
System Time [14:05:42]
Access Level Administraor
Choose the system default language
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

System Date

The date format is <day>, <month>, <date>, <year>. Day displays a day, from Sunday to Saturday. Month displays the month, from January to December. Date displays the date, from 1 to 31. Year displays the year, from 1980 to 2099.

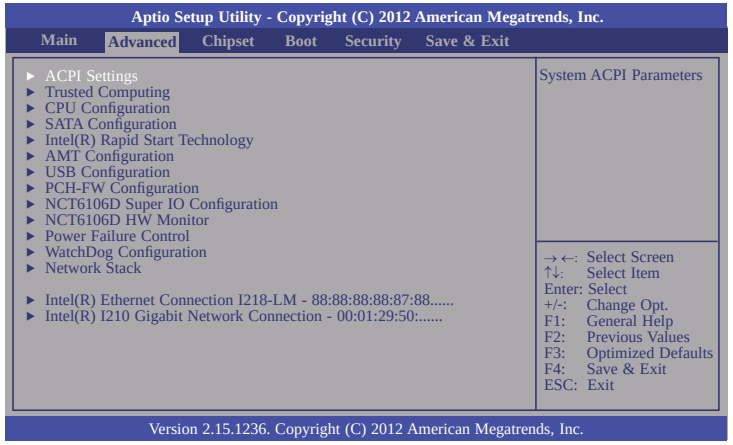
System Time

The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.

Advanced

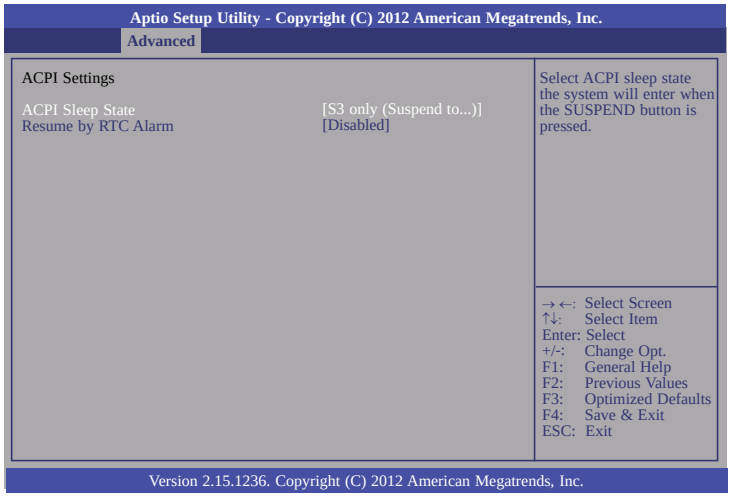
The Advanced menu allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference.

Important:
Setting incorrect field values may cause the system to malfunction.


Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
▶ ACPI Settings
▶ Trusted Computing
▶ CPU Configuration
▶ SATA Configuration
▶ Intel(R) Rapid Start Technology
▶ AMT Configuration
▶ USB Configuration
▶ PCH-FW Configuration
▶ NCT6106D Super IO Configuration
▶ NCT6106D HW Monitor
▶ Power Failure Control
▶ WatchDog Configuration
▶ Network Stack
▶ Intel(R) Ethernet Connection I218-LM - 88:88:88:88:87:88.....
▶ Intel(R) I210 Gigabit Network Connection - 00:01:29:50:.....
System ACPI Parameters
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

ACPI Settings

This section is used to configure the system ACPI parameters.


Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Advanced
ACPI Settings
ACPI Sleep State [S3 only (Suspend to...)]
Resume by RTC Alarm [Disabled]
Select ACPI sleep state the system will enter when the SUSPEND button is pressed.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

ACPI Sleep State

Selects the highest ACPI sleep state the system will enter when the Suspend button is pressed.

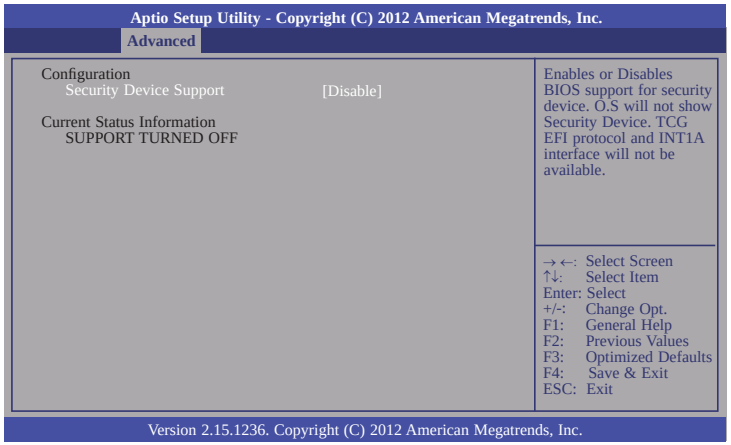
S1 only (CSC) Enables the CPU Stop Clock.
S3 only (STR) Enables the Suspend to RAM.
Both S1 and S3 available for OS to choose from

Resume by RTC Alarm

When Enabled, the system uses the RTC to generate a wakeup event.

Trusted Computing

This section configures settings relevant to Trusted Computing innovations.

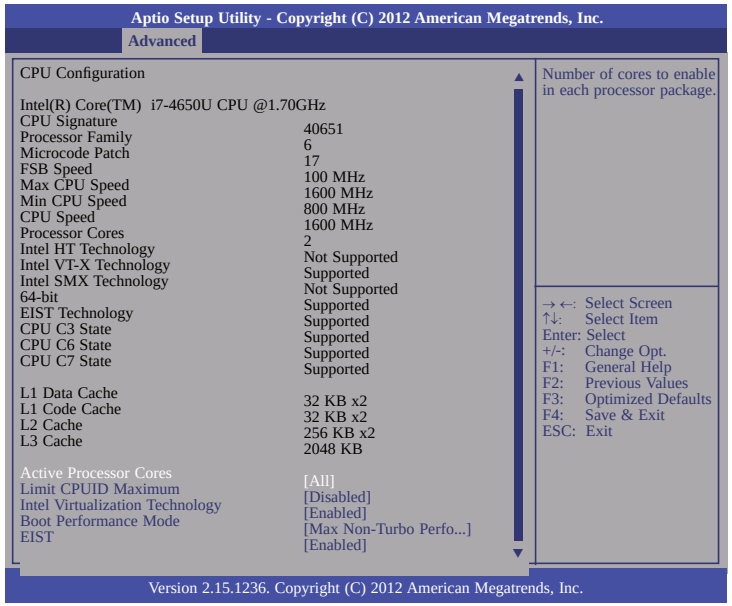

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Advanced
Configuration
Security Device Support [Disable]
Current Status Information
SUPPORT TURNED OFF
Enables or Disables BIOS support for security device. O.S will not show Security Device. TCG EFI protocol and INT1A interface will not be available.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

Security Device Support

This field is used to enable or disable BIOS supporting for the security device. O.S will not show the security device. TCG EFI protocol and INT1A interface will not be available.

CPU Configuration

This section is used to configure the CPU. It will also display the detected CPU information.


Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Advanced
CPU Configuration
Intel(R) Core(TM) i7-4650U CPU @1.70GHz
CPU Signature 40651
Processor Family 6
Microcode Patch 17
FSB Speed 100 MHz
Max CPU Speed 1600 MHz
Min CPU Speed 800 MHz
CPU Speed 1600 MHz
Processor Cores 2
Intel HT Technology Not Supported
Intel VT-X Technology Supported
Intel SMX Technology Not Supported
64-bit Supported
EIST Technology Supported
CPU C3 State Supported
CPU C6 State Supported
CPU C7 State Supported
L1 Data Cache 32 KB x2
L1 Code Cache 32 KB x2
L2 Cache 256 KB x2
L3 Cache 2048 KB
Active Processor Cores [All]
Limit CPUID Maximum [Disabled]
Intel Virtualization Technology [Enabled]
Boot Performance Mode [Max Non-Turbo Perfo...]
EIST [Enabled]
Number of cores to enable in each processor package.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

Active Processor Cores

Number of cores to enable in each processor package.

Limit CPUID Maximum

Disabled for Windows XP.

Intel Virtualization Technology

When this field is set to Enabled, the VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

Boot Performance Mode

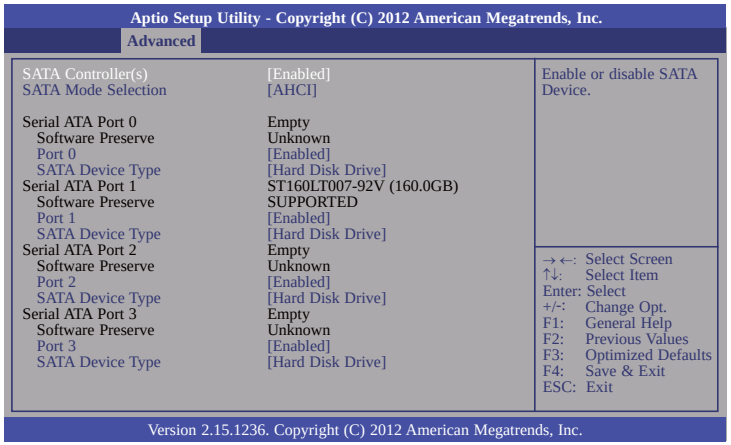
Selects the performance state that the BIOS will set before OS handoff.

EIST

This field is used to enable or disable the Intel Enhanced SpeedStep Technology.

SATA Configuration

This section is used to configure the settings of SATA device.


Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Advanced
SATA Controller(s) [Enabled]
SATA Mode Selection [AHCI]
Serial ATA Port 0 Empty
Software Preserve Unknown
Port 0 [Enabled]
SATA Device Type [Hard Disk Drive]
Serial ATA Port 1 ST160LT007-92V (160.0GB)
Software Preserve SUPPORTED
Port 1 [Enabled]
SATA Device Type [Hard Disk Drive]
Serial ATA Port 2 Empty
Software Preserve Unknown
Port 2 [Enabled]
SATA Device Type [Hard Disk Drive]
Serial ATA Port 3 Empty
Software Preserve Unknown
Port 3 [Enabled]
SATA Device Type [Hard Disk Drive]
Enable or disable SATA Device.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

SATA Controller(s)

This field is used to enable or disable Serial ATA devices.

SATA Mode Selection

The mode selection determines how the SATA controller(s) operates.

AHCI Mode
This option allows the Serial ATA devices to use AHCI (Advanced Host Controller Interface).

RAID Mode
This option allows you to create RAID or Intel Matrix Storage configuration on Serial ATA devices.

Port 0/1/2/3

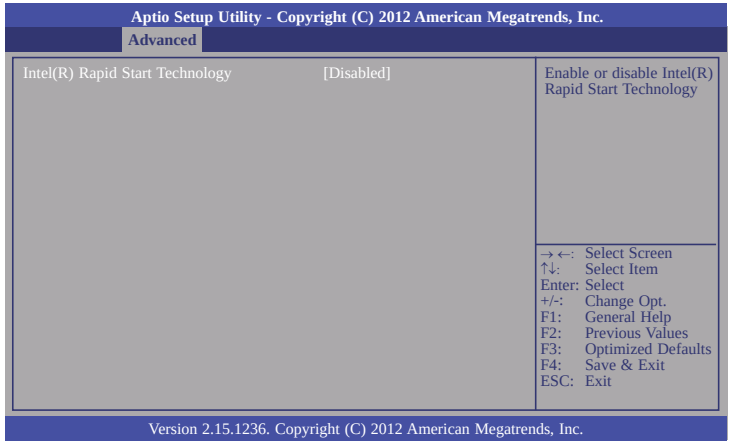
This field is used to enable or disable the serial ATA port.

SATA Device Type

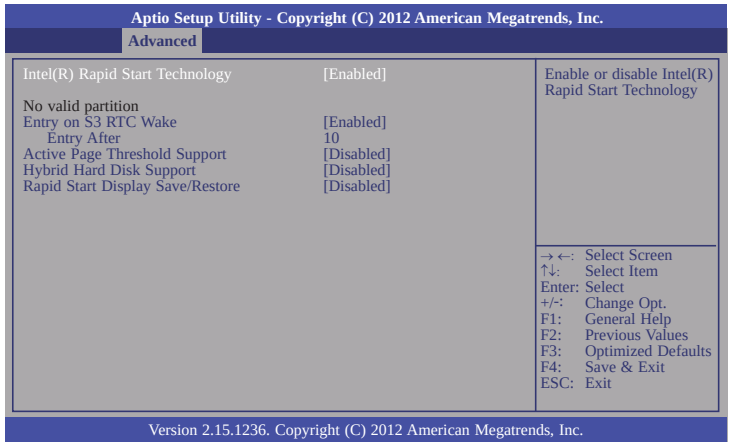
Identify the serial ATA port which is connected to the Solid State Drive or the Hard Disk Drive.

Intel(R) Rapid Start Technology

This section is used to enable or disable the Intel Rapid Start Technology.


Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Advanced
Intel(R) Rapid Start Technology [Disabled]
Enable or disable Intel(R) Rapid Start Technology
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

When enabled, it will display the following information.


Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Advanced
Intel(R) Rapid Start Technology [Enabled]
No valid partition
Entry on S3 RTC Wake [Enabled]
Entry After 10
Active Page Threshold Support [Disabled]
Hybrid Hard Disk Support [Disabled]
Rapid Start Display Save/Restore [Disabled]
Enable or disable Intel(R) Rapid Start Technology
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

Entry on S3 RTC Wake

This field is used to enable or disable the rapid start invocation upon S3 RTC wake.

Entry After

Enables RTC wake timer at S3 entry. Enters the value range from 0 (immediately) to 120 minutes.

Active Page Threshold Support

This field is used to support RST with small partition.

Hybrid Hard Disk Support

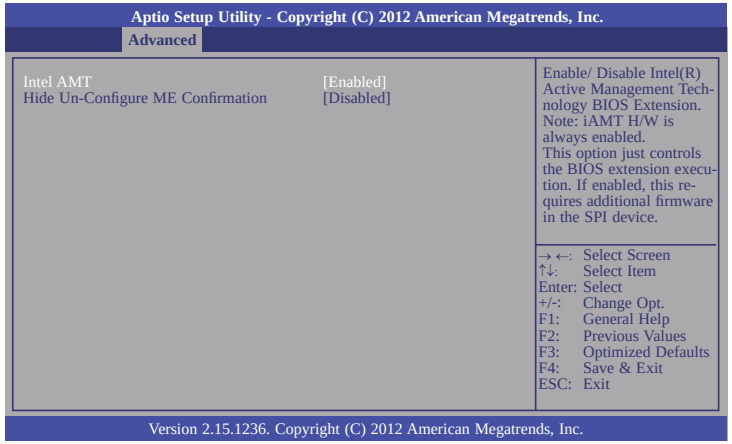
Enables or disables the hybrid hard disk support.

Rapid Start Display Save/Restore

Enables or disables the rapid start display save or restore.

AMT Configuration

This section configures the parameters of Active Management Technology.


Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Advanced
Intel AMT [Enabled]
Hide Un-Configure ME Confirmation [Disabled]
Enable/ Disable Intel(R) Active Management Technology BIOS Extension. Note: iAMT H/W is always enabled. This option just controls the BIOS extension execution. If enabled, this requires additional firmware in the SPI device.
→ ←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

Intel AMT

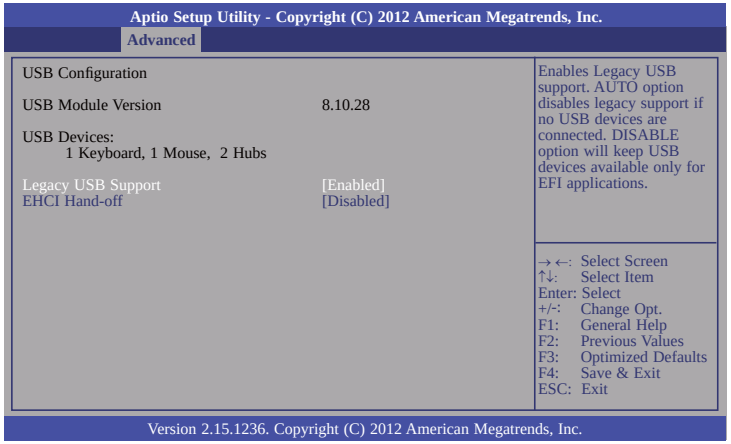
Enables or disables the AMT function.

Hide Un-Configure ME Confirmation

OEMFlag Bit 6: Hide Un-configure ME without the password confirmation prompt.

USB Configuration

This section is used to configure the parameters of the USB device.


Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Advanced
USB Configuration
USB Module Version 8.10.28
USB Devices:
1 Keyboard, 1 Mouse, 2 Hubs
Legacy USB Support [Enabled]
EHCI Hand-off [Disabled]
Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
→ ←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

Legacy USB Support

Enabled
Enables legacy USB.

Disabled
Keeps USB devices available only for EFI applications.

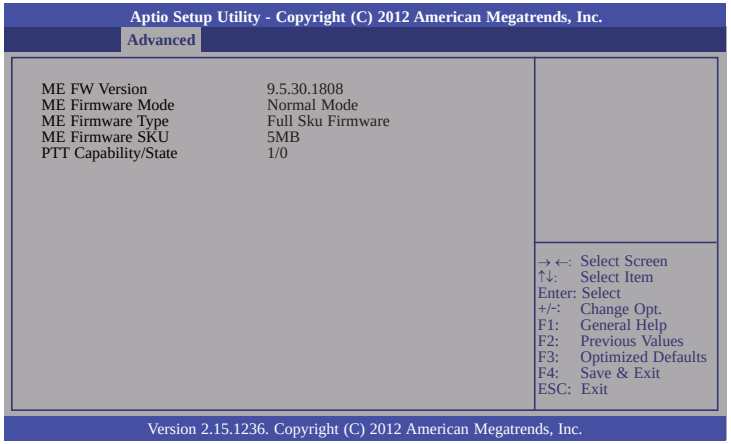
Auto
Disables support for legacy when no USB devices are connected.

EHCI Hand-off

This is a workaround for OSes without the EHCI hand-off support. The EHCI ownership change should be claimed by the EHCI driver.

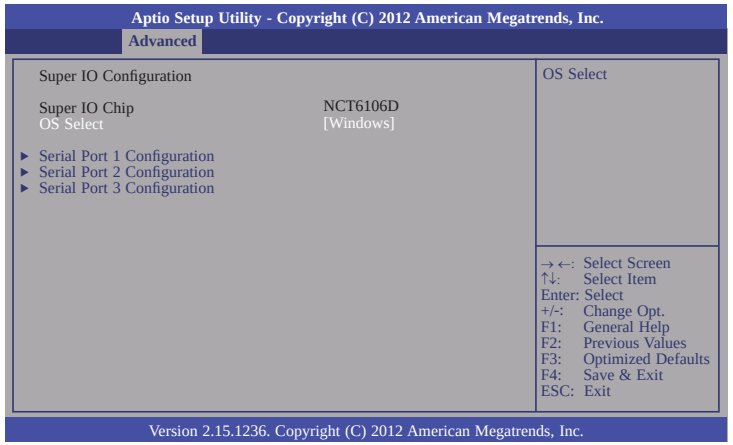
PCH-FW Configuration

This section only displays the parameters of Management Engine Technology.



NCT6106D Super IO Configuration

This section is used to configure the I/O functions supported by the onboard Super I/O chip.

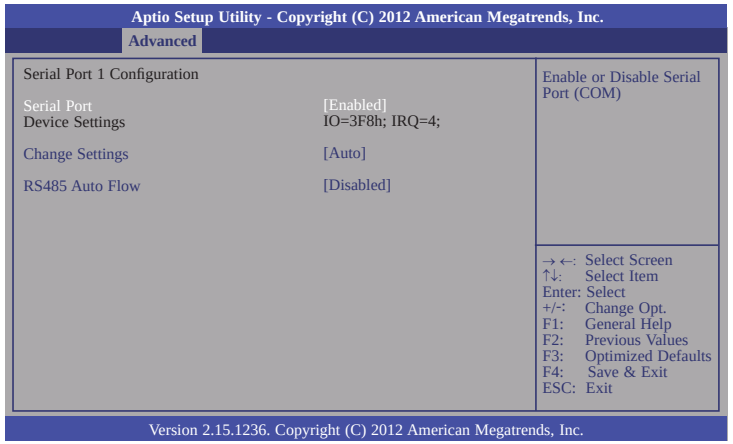


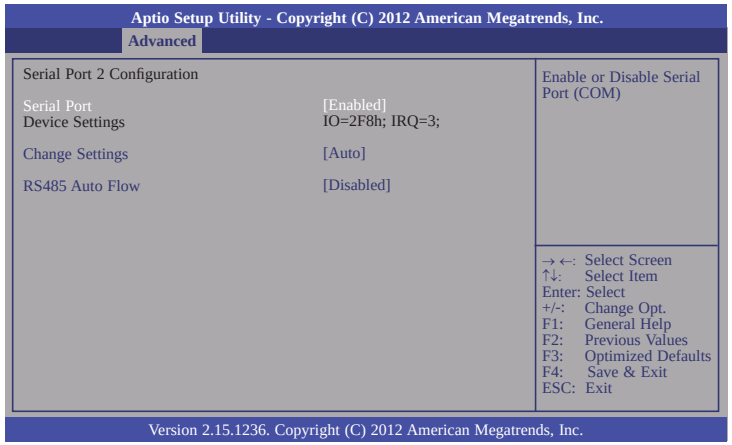
OS Select

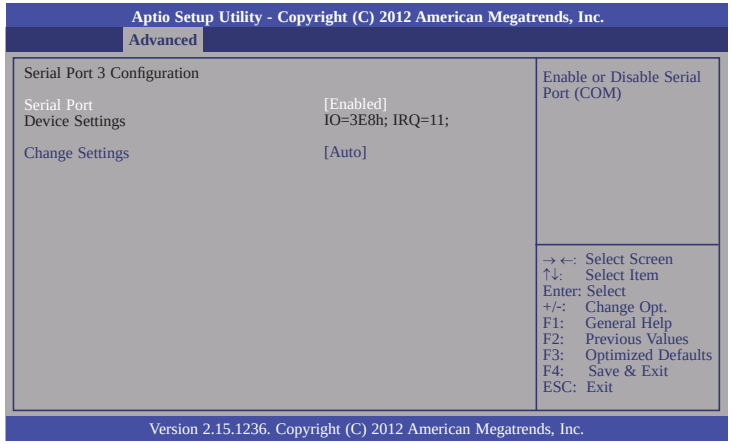
Select the OS support: Windows or Linux/DOS.

Serial Port 1 Configuration to Serial Port 3 Configuration

Set the parameters of serial port 1 (COM A) to serial port 3 (COM C).







Serial Port

Enables or disables the serial COM port.

Change Settings

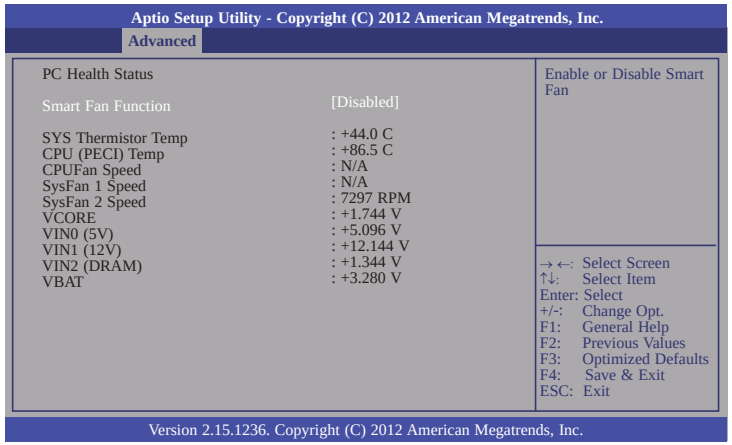
Selects the IO/IRQ settings for the super I/O device.

RS485 Auto Flow

Sets the RS485 auto flow of the serial COM port.

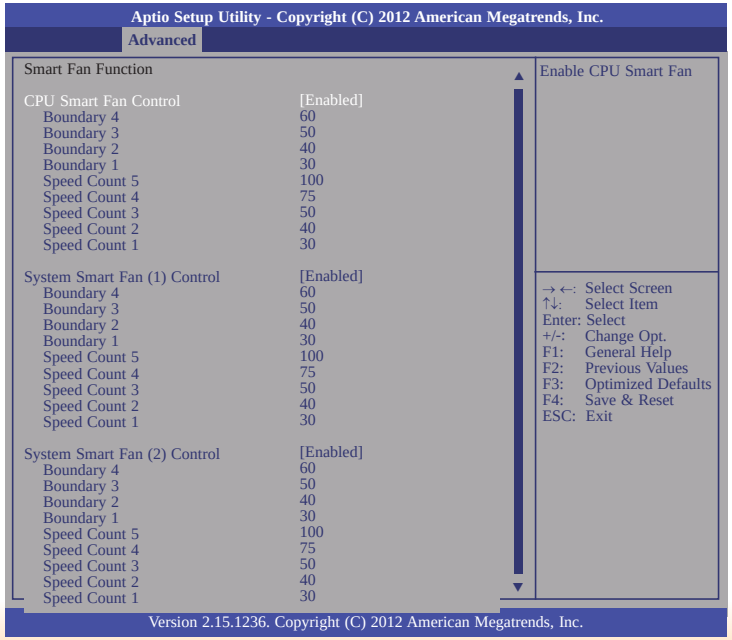
NCT6106D HW Monitor

This section displays the hardware health monitor.


Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Advanced
PC Health Status
Smart Fan Function [Disabled]
SYS Thermistor Temp : +44.0 C
CPU (PECI) Temp : +86.5 C
CPUFan Speed : N/A
SysFan 1 Speed : N/A
SysFan 2 Speed : 7297 RPM
VCORE : +1.744 V
VIN0 (5V) : +5.096 V
VIN1 (12V) : +12.144 V
VIN2 (DRAM) : +1.344 V
VBAT : +3.280 V
Enable or Disable Smart Fan
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

Smart Fan Function

Enables or Disables the Smart Fan.



CPU Smart Fan Control

When this feature is set to Automatic, the CPU's fan speed will rotate according to the CPU's temperature. The higher the temperature, the faster the speed of rotation.

System Smart Fan Control

When this feature is set to Automatic, the System's fan speed will rotate according to the System's temperature. The higher the temperature, the faster the speed of rotation.

Boundary 1 to Boundary 4

The range is 0-127.

Speed Count 1 to Speed Count 5

The range is 1-100%.

Aux Fan Mode

Selects the Aux fan's mode. The options are Thermal CruiseTM Mode, Fan Speed CruiseTM Mode and SmartFan TM IV Mode.

AuxFan Target Temp

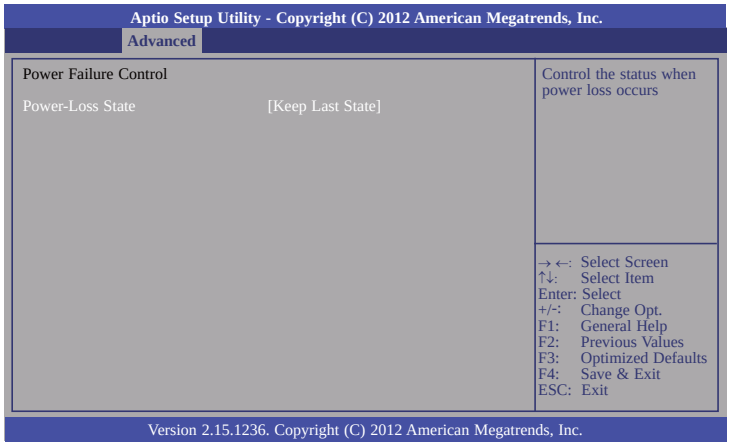
This field is used to enter the target value of the Aux fan's temperature.

AuxFan Tolerance

This field is used to enter the tolerance value of the Aux fan's temperature.

Power Failure Control

This section configures the status control when the power failure occurs.



Power-Loss State

Controls the status when the power loss occurs.

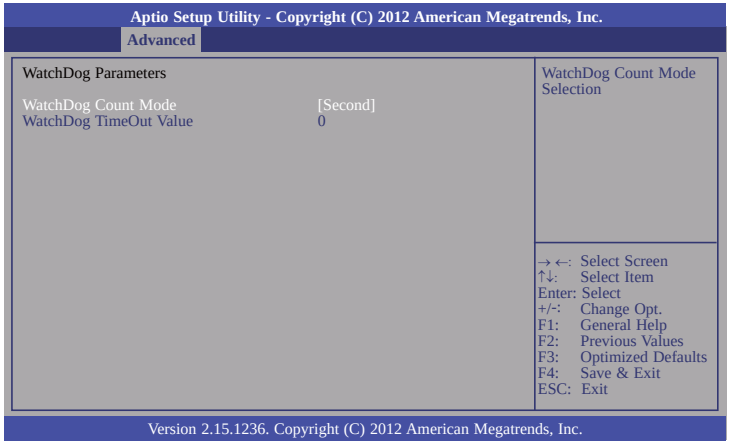
Always Off
When power returns after an AC power failure, the system's power is off. You must press the Power button to power-on the system.

Always On
When power returns after an AC power failure, the system will automatically power-on.

Keep Last State
When power returns after an AC power failure, the system will return to the state where you left off before power failure occurs. If the system's power is off when AC power failure occurs, it will remain off when power returns. If the system's power is on when AC power failure occurs, the system will power-on when power returns.

WatchDog Configuration

This section sets the system watchdog parameters.



WatchDog Count Mode

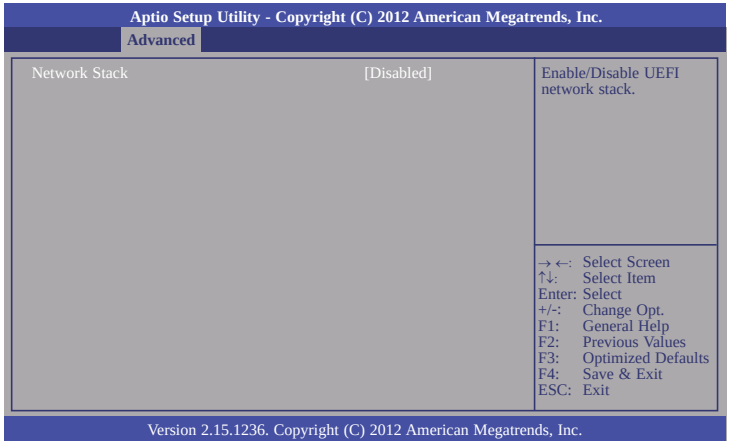
Selects the watchdog count mode.

WatchDog TimeOut Value

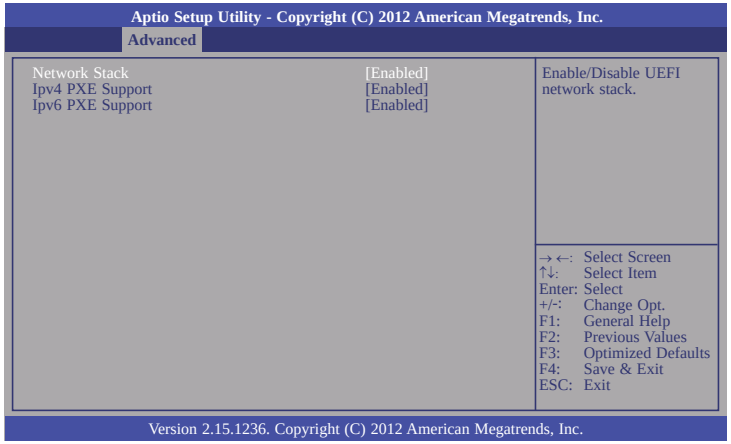
Enters the watchdog timeout value. 0 means disabled.

Network Stack

This section is used to enable or disable UEFI network stack.



When Network Stack is enabled, it will display the following information:



Ipv4 PXE Support

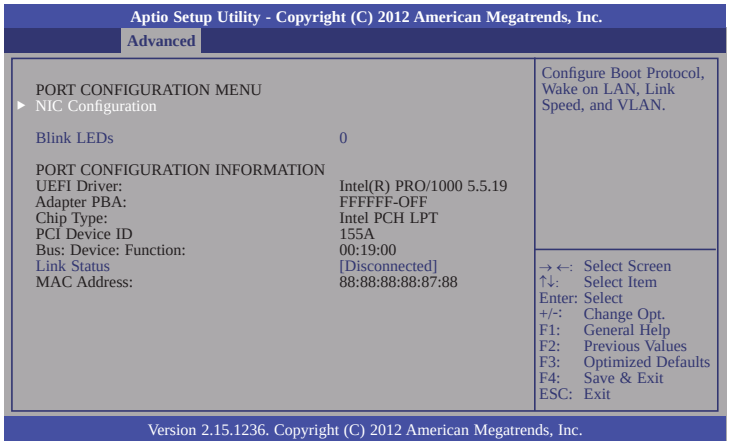
When enabled, Ipv4 PXE boot supports. When disabled, Ipv4 PXE boot option will not be created.

Ipv6 PXE Support

When enabled, Ipv6 PXE boot supports. When disabled, Ipv6 PXE boot option will not be created.

Intel(R) Ethernet Connection I218-LM - 88:88:88:88:87:88...

This section is used to configure the parameters of the Gigabit Ethernet device.



Blink LEDs

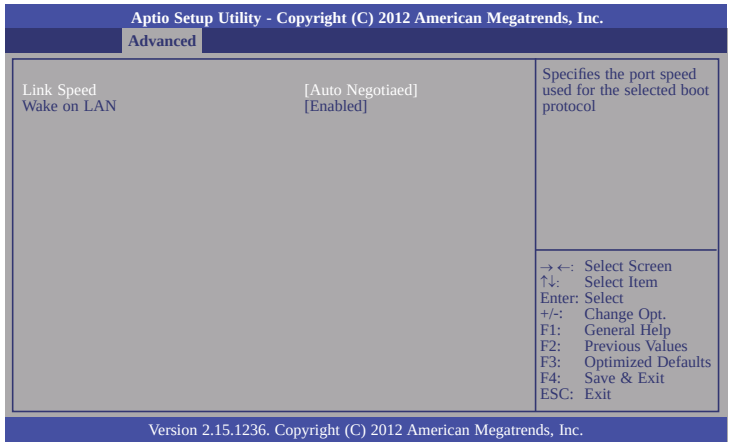
Identifies the physical network port by blinking the associated LED.

Link Status

This field indicates the link status of the network device.

NIC Configuration

This field is used to configure the Boot Protocol, Wake on LAN, Link Speed and VLAN.


Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Advanced
Link Speed [Auto Negotiaed]
Wake on LAN [Enabled]
Specifies the port speed used for the selected boot protocol
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

Link Speed

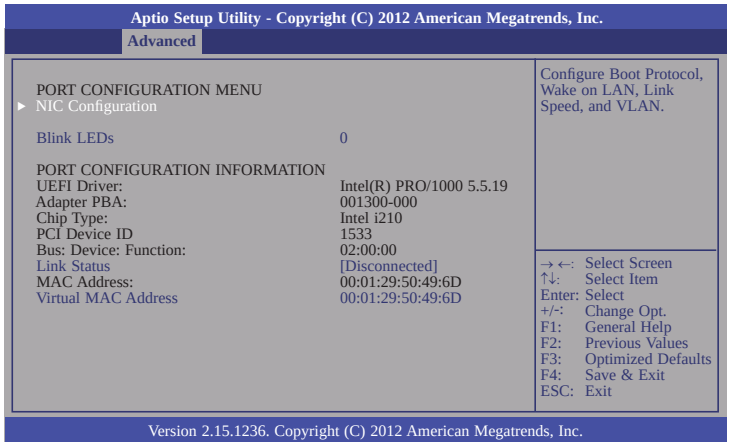
This field is used to specify the port speed used for the selected boot protocol.

Wake on LAN

Enables the server to be powered on using an in-band magic packet.

Intel(R) I210 Gigabit Network Connection - 00:01:29:50...

This section is used to configure the parameters of the Gigabit Ethernet device.



Blink LEDs

Identifies the physical network port by blinking the associated LED.

Link Status

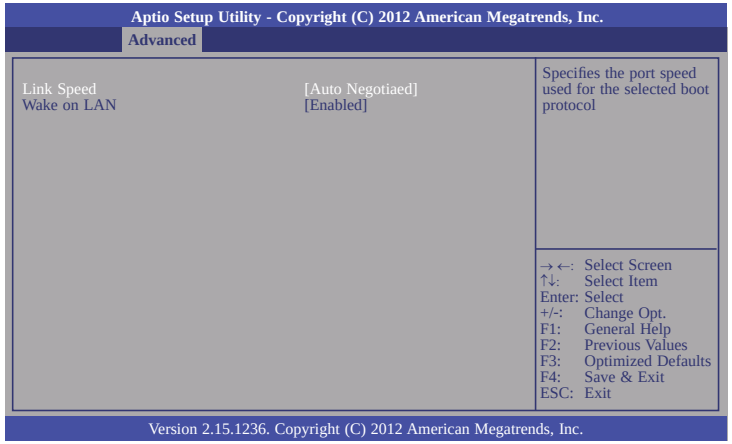
This field indicates the link status of the network device.

Virtual MAC Address

Programmatically assignable MAC address of the Ethernet port.

NIC Configuration

This field is used to configure the Boot Protocol, Wake on LAN, Link Speed and VLAN.



Link Speed

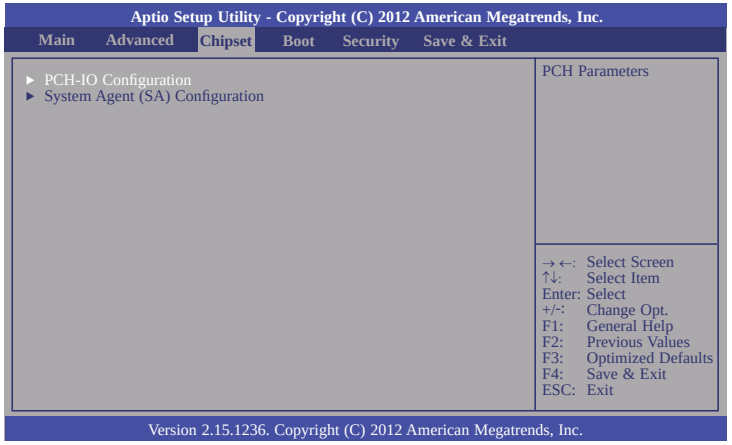
This field is used to specify the port speed used for the selected boot protocol.

Wake on LAN

Enables the server to be powered on using an in-band magic packet.

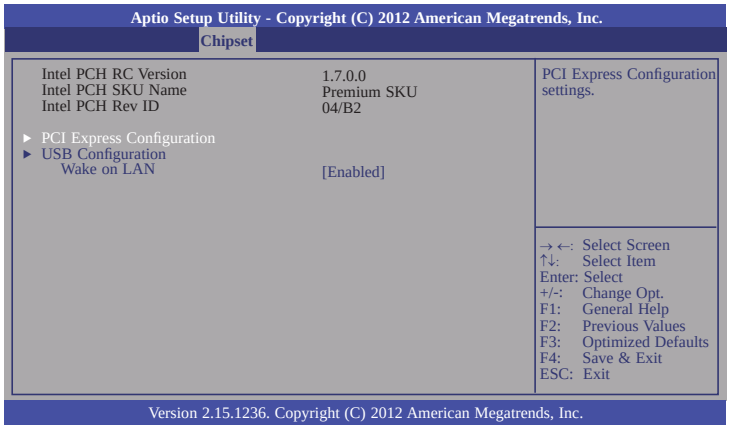
Chipset

This section configures relevant chipset functions.



PCH-IO Configuration

This section illustrates the PCH parameters.

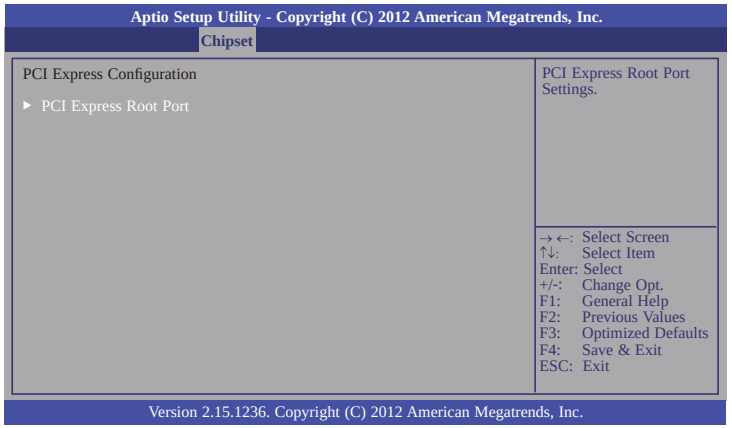


Wake on LAN

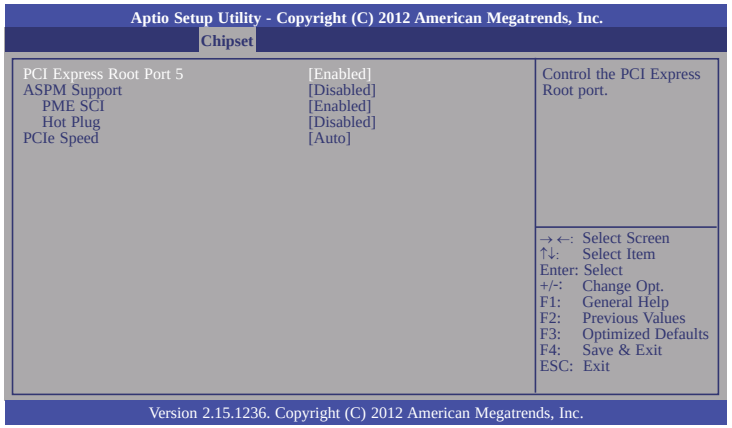
Enables or disables the integrated LAN controller to wake the system. (The Wake on LAN cannot be disabled if ME is set to On at the Sx state.)

PCI Express Configuration

This field is used to configure the PCI Express settings.



PCI Express Root Port



ASPM Support

Sets the ASPM support.

Force L0s Force all links to the L0s state
Auto BIOS auto configure
Disabled Disable the ASPM support

PME SCI

Enables or disables the PCI Express PME SCI.

Hot Plug

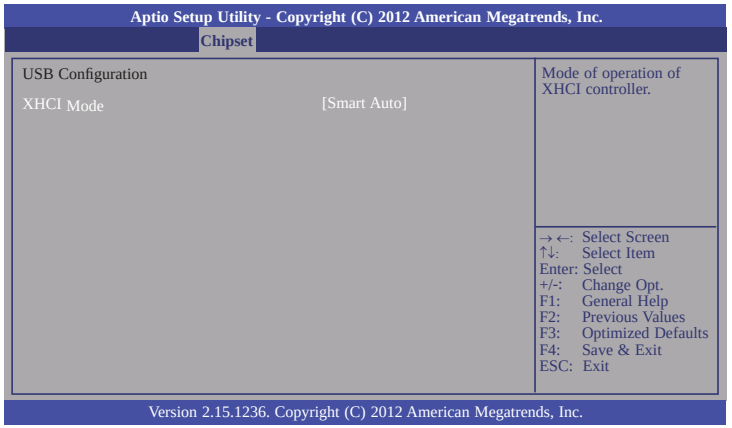
Enables or disables the PCI Express Hot Plug.

PCIe Speed

Selects the PCI Express port speed.

USB Configuration

This field is used to configure the USB settings.

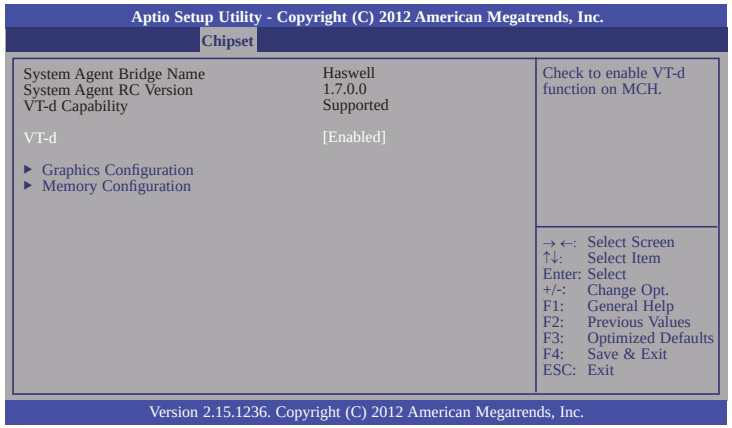


XHCI Mode

Selects the operation mode of the XHCI controller. The options are Smart Auto, Auto, Enabled, Disabled and Manual.

System Agent (SA) Configuration

This section is used to configure the parameters of System Agent.

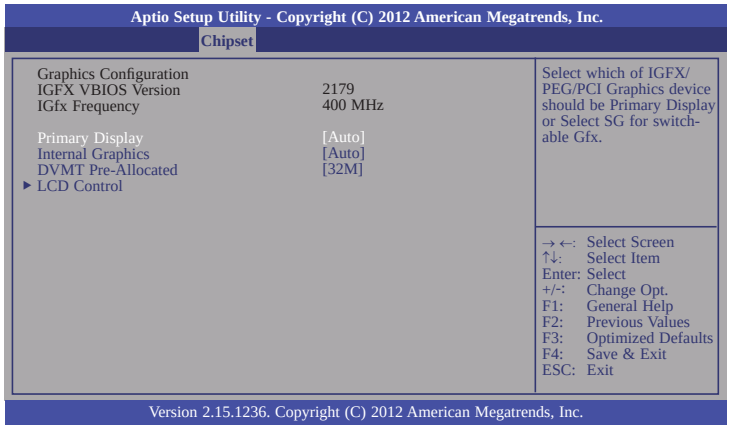


VT-d

Enables the VT-d function on MCH.

Graphics Configuration

This field configures the graphics settings.



Primary Display

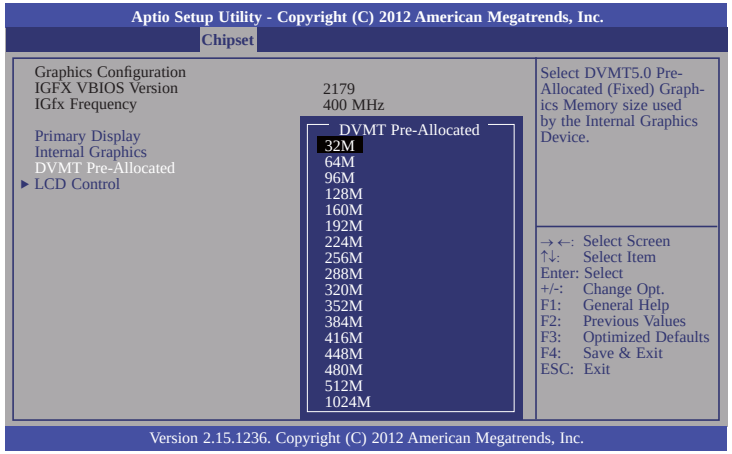
Auto When the system boots, it will auto detects the display device.
IGFX When the system boots, it will first initialize the onboard VGA.
PCIE When the system boots, it will first initialize the PCI Express x1 graphics card.

Internal Graphics

Keeps IGD enabled based on the setup options.

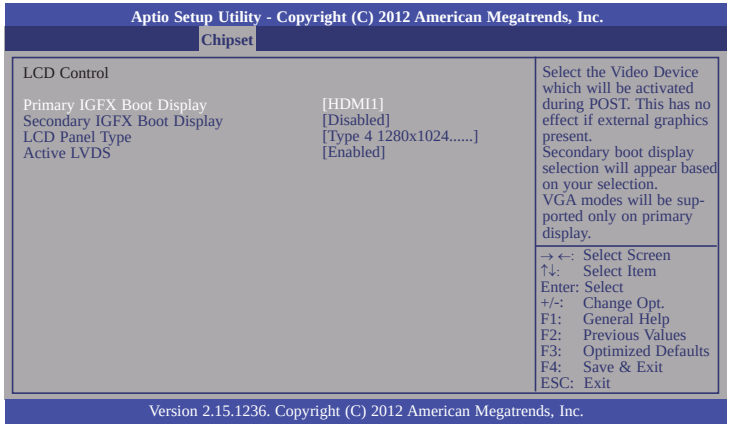
DVMT Pre-Allocated

Selects DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device. Please refer to the information shown below.



LCD Control

This field configures the LCD control.

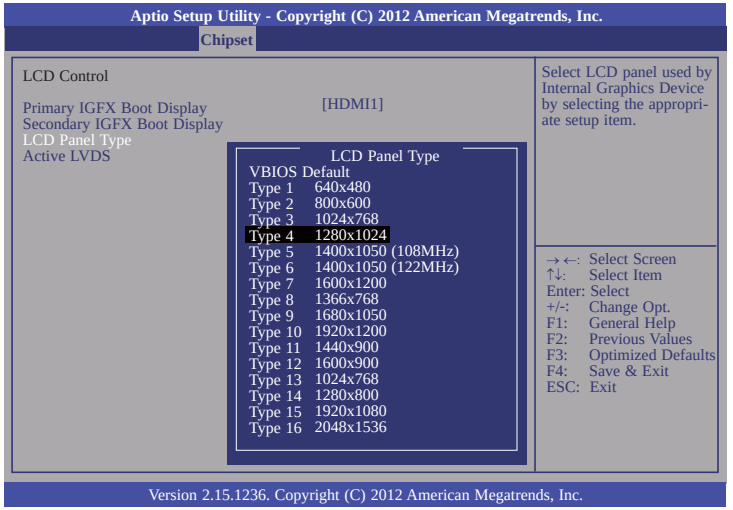

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Chipset
LCD Control
Primary IGFX Boot Display [HDMI1]
Secondary IGFX Boot Display [Disabled]
LCD Panel Type [Type 4 1280x1024.....]
Active LVDS [Enabled]
Select the Video Device which will be activated during POST. This has no effect if external graphics present.
Secondary boot display selection will appear based on your selection.
VGA modes will be supported only on primary display.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

Secondary IGFX Boot Display

Selects the secondary display device.

LCD Panel Type

Selects the LCD panel used by the Internal Graphics Device via selecting the appropriate setup item.

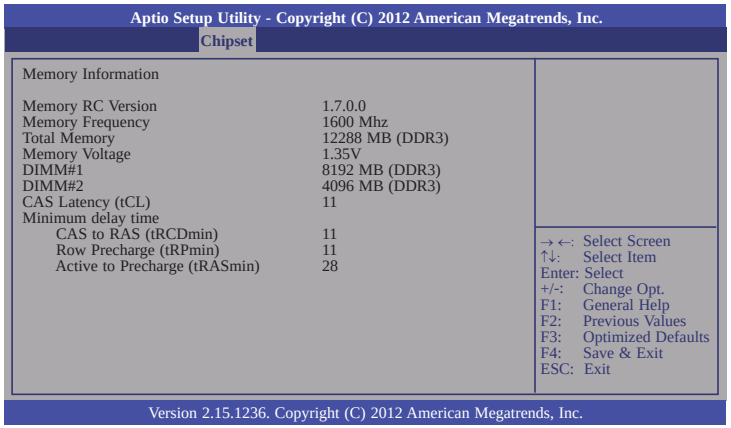


Active LVDS

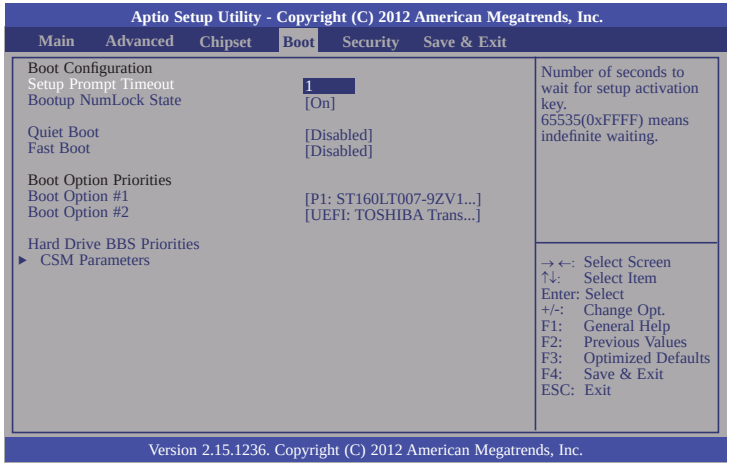
Enables or disables the LVDS function.

Memory Configuration

This field only displays the memory configuration.



Boot



Setup Prompt Timeout

Selects the number of seconds to wait for the setup activation key. 65535(0xFFFF) denotes indefinite waiting.

Bootup NumLock State

This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on wherein the function of the numeric keypad is the number keys. When set to Off, the function of the numeric keypad is the arrow keys.

Quiet Boot

Enables or disables the quiet boot function.

Fast Boot

Enables or disables the boot with the initialization of a minimal set of devices required to launch the active boot option. Has no effect on BBS boot options.

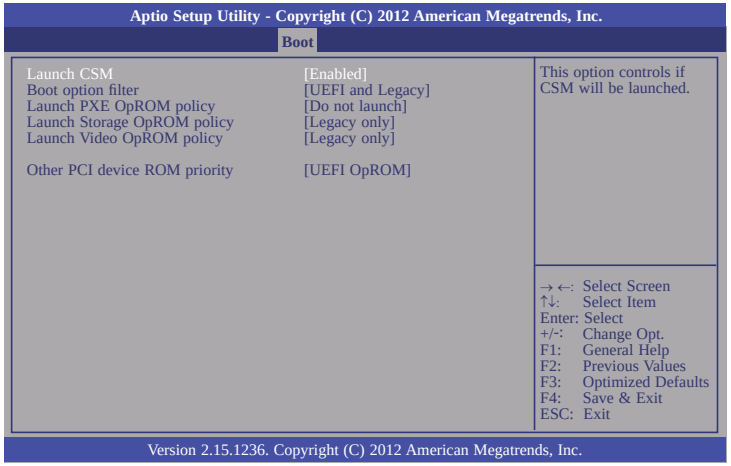
Boot Option #1/#2

Sets the system boot order.

Hard Drive BBS Priorities

Sets the order of the legacy devices in this group.

CSM Parameters



Launch CSM

This option controls if CSM will be launched.

Boot option filter

This option controls what devices system can boot to.

Launch PXE OpROM policy

Controls the execution of UEFI and legacy PXE OpROM.

Launch Storage OpROM policy

Controls the execution of UEFI and legacy storage OpROM.

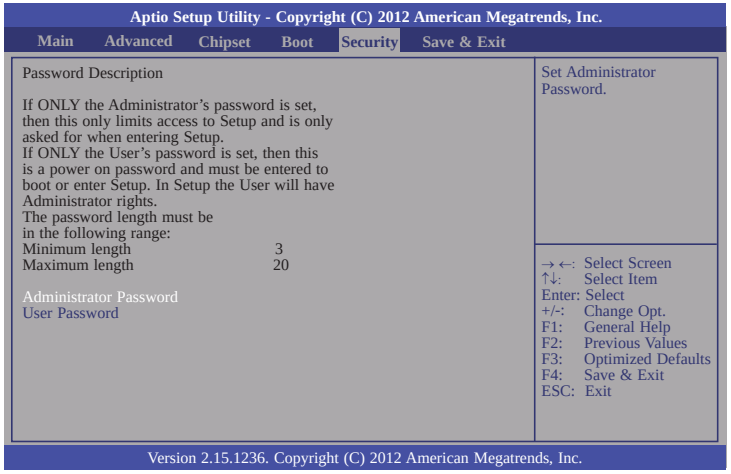
Launch Video OpROM policy

Controls the execution of UEFI and legacy video OpROM.

Other PCI device ROM priority

For PCI devices other than Network. Mass storage or Video defines which OpROM to launch.

Security


Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
Password Description
If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup.
If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator rights.
The password length must be in the following range:
Minimum length 3
Maximum length 20
Administrator Password
User Password
Set Administrator Password.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

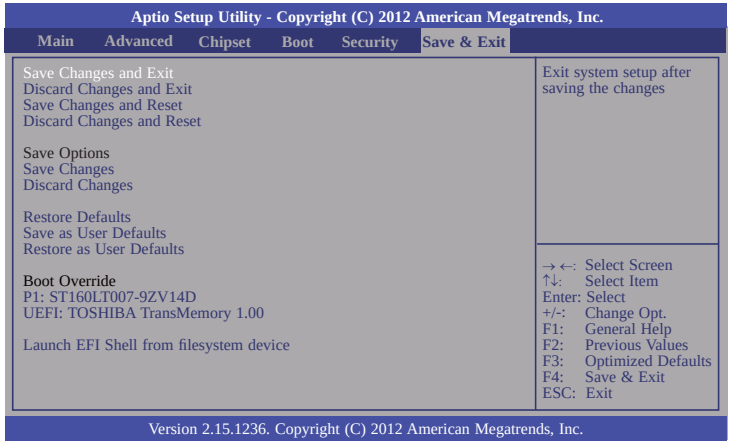
Administrator Password

Sets the administrator password.

User Password

Sets the user password.

Save & Exit



Save Changes and Exit

Exits the system setup after saving the changes.

Discard Changes and Exit

Exits the system setup without saving any changes.

Save Changes and Reset

To save the changes, select this field and then press <Enter>. A dialog box will appear. Select Yes to reset the system after saving all changes made.

Discard Changes and Reset

To discard the changes, select this field and then press <Enter>. A dialog box will appear. Select Yes to reset the system setup without saving any changes.

Save Changes

Saves changes done so far to any of the setup options.

Discard Changes

Discards changes done so far to any of the setup options.

Restore Defaults

To restore and load the optimized default values, select this field and then press <Enter>. A dialog box will appear. Select Yes to restore the default values of all the setup options.

Save as User Defaults

To save changes done so far as user default, select this field and then press <Enter>. A dialog box will appear. Select Yes to save values as user default.

Restore User Defaults

To restore user default to all the setup options, select this field and then press <Enter>. A dialog box will appear. Select Yes to restore user default.

Launch EFI Shell from filesystem device

Attempts to Launch EFI Shell application (Shellx64.efi) from one of the available filesystem devices.

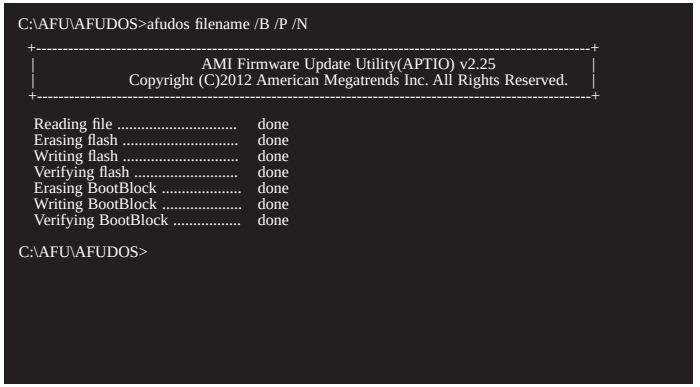
Updating the BIOS

To update the BIOS, you will need the new BIOS file and a flash utility, AFUDOS.EXE. Please contact technical support or your sales representative for the files.

To execute the utility, type:

A:> AFUDOS BIOS_File_Name /b /p /n

then press <Enter>.


C:\AFU\AFUDOS>afudos filename /B /P /N
AMI Firmware Update Utility(APTIO) v2.25
Copyright (C)2012 American Megatrends Inc. All Rights Reserved.
Reading file ..... done
Erasing flash ..... done
Writing flash ..... done
Verifying flash ..... done
Erasing BootBlock ..... done
Writing BootBlock ..... done
Verifying BootBlock ..... done
C:\AFU\AFUDOS>

Notice: BIOS SPI ROM

1. The Intel® Management Engine has already been integrated into this system board. Due to the safety concerns, the BIOS (SPI ROM) chip cannot be removed from this system board and used on another system board of the same model.

2. The BIOS (SPI ROM) on this system board must be the original equipment from the factory and cannot be used to replace one which has been utilized on other system boards.

3. If you do not follow the methods above, the Intel® Management Engine will not be updated and will cease to be effective.

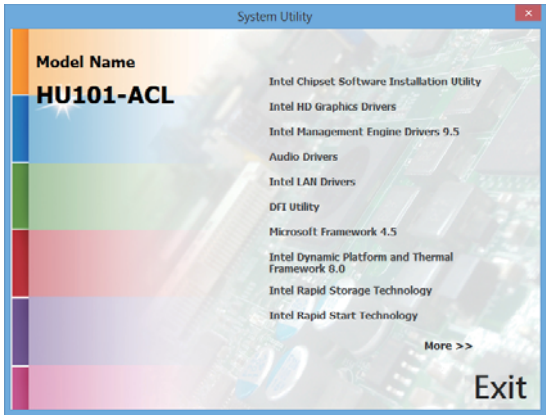
Note:
a. You can take advantage of flash tools to update the default configuration of the BIOS (SPI ROM) to the latest version anytime.
b. When the BIOS IC needs to be replaced, you have to populate it properly onto the system board after the EEPROM programmer has been burned and follow the technical person's instructions to confirm that the MAC address should be burned or not.

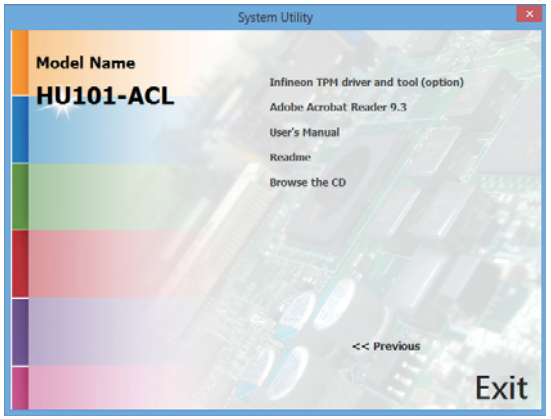
Chapter 4 - Supported Software

The CD that came with the system board contains drivers, utilities and software applications required to enhance the performance of the system board.

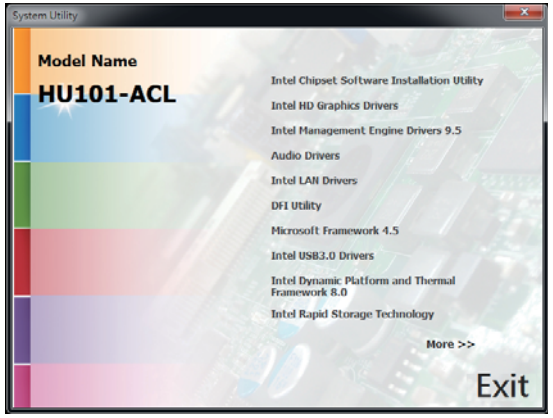
Insert the CD into a CD-ROM drive. The autorun screen (Mainboard Utility CD) will appear. If after inserting the CD, “Autorun” did not automatically start (which is, the Mainboard Utility CD screen did not appear), please go directly to the root directory of the CD and double-click “Setup”.

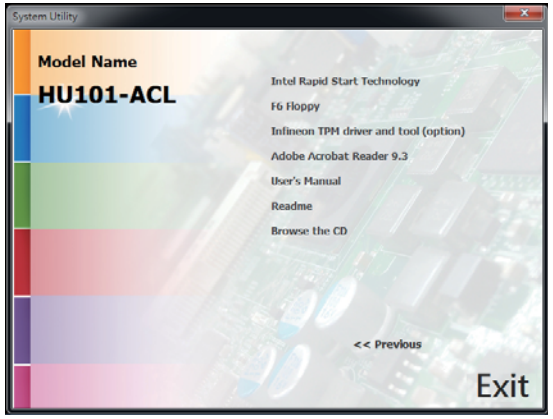
For Windows 8





For Windows 7





Intel Chipset Software Installation Utility

The Intel Chipset Software Installation Utility is used for updating Windows® INF files so that the Intel chipset can be recognized and configured properly in the system.

To install the utility, click "Intel Chipset Software Installation Utility" on the main menu.

1. Setup is ready to install the utility. Click Next.

Intel® Chipset Device Software
Intel® Chipset Device Software
Welcome to the Setup Program
This setup program will install the Intel® Chipset Device Software onto this computer. It is strongly recommended that you exit all programs before continuing.
< Back
Next >
Cancel
Intel® Installation Framework

2. Read the license agreement then click Yes.

Intel® Chipset Device Software
Intel® Chipset Device Software
License Agreement
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
< Back
Yes
No
Intel® Installation Framework

3. Go through the readme document for more installation tips then click Next.

Intel® Chipset Device Software
Intel® Chipset Device Software
Readme File Information
Refer to the Readme file below to view the system requirements and installation information. Press the Page Down key to view the rest of the file.
* Product: Intel(R) Chipset Device Software
* Release: Production Version
* Version: 9.1.1.1024
* Target Chipset#: Intel(R) 5 Series/3400 Series Chipse
* Date: November 18 2009
< Back
Next >
Cancel
Intel® Installation Framework

4. Click Finish to exit setup.

Intel® Chipset Device Software
Intel® Chipset Device Software
Setup Is Complete
The setup program successfully installed the Intel® Chipset Device Software onto this computer. Click Finish to complete the setup process.
Finish
Intel® Installation Framework

Intel HD Graphics Drivers

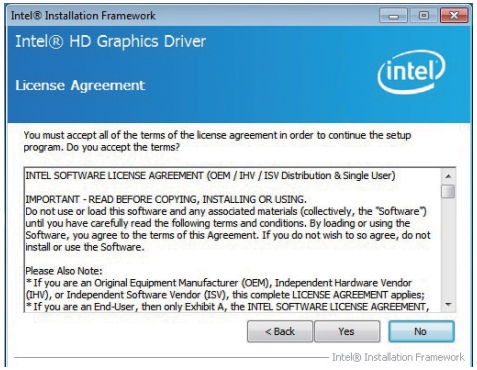
To install the driver, click “Intel HD Graphics Drivers” on the main menu.

1. Setup is now ready to install the graphics driver. Click Next.

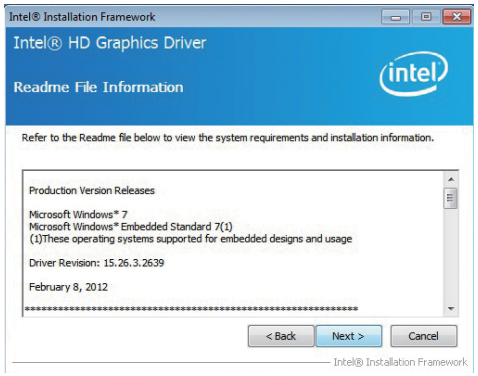
Intel® Installation Framework
Intel® HD Graphics Driver
Welcome to the Setup Program
This setup program will install the following components:
- Intel® HD Graphics Driver
- Intel® Display Audio Driver
It is strongly recommended that you exit all programs before continuing. Click Next to continue.
Automatically run WinSAT and enable the Windows Aero desktop theme (if supported).
< Back
Next >
Cancel
Intel® Installation Framework

By default, the “Automatically run WinSAT and enable the Windows Aero desktop theme” is enabled. With this enabled, after installing the graphics driver and the system rebooted, the screen will turn blank for 1 to 2 minutes (while WinSAT is running) before the Windows Vista desktop appears. The “blank screen” period is the time Windows is testing the graphics performance.

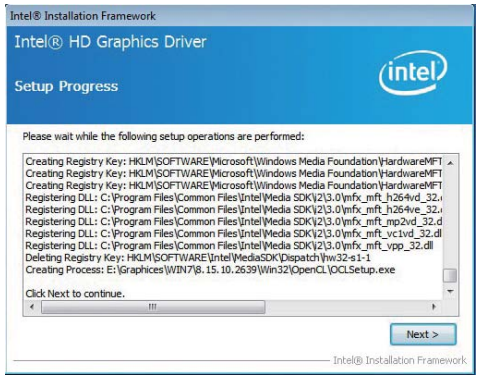
2. Read the license agreement then click Yes.


Intel® Installation Framework
Intel® HD Graphics Driver
License Agreement
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
* If you are an End-User, then only Exhibit A, the INTEL SOFTWARE LICENSE AGREEMENT,
< Back
Yes
No
Intel® Installation Framework

3. Go through the readme document for system requirements and installation tips then click Next.

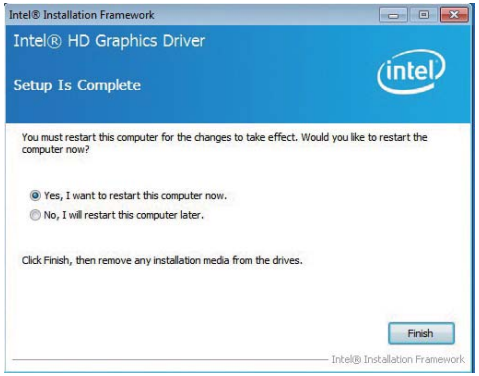

Intel® Installation Framework
Intel® HD Graphics Driver
Readme File Information
Refer to the Readme file below to view the system requirements and installation information.
Production Version Releases
Microsoft Windows* 7
Microsoft Windows* Embedded Standard 7(1)
(1)These operating systems supported for embedded designs and usage
Driver Revision: 15.26.3.2639
February 8, 2012
< Back
Next >
Cancel
Intel® Installation Framework

4. Setup is now installing the driver. Click Next to continue.


Intel® Installation Framework
Intel® HD Graphics Driver
Setup Progress
Please wait while the following setup operations are performed:
Creating Registry Key: HKLM\SOFTWARE\Microsoft\Windows Media Foundation\HardwareMFT
Creating Registry Key: HKLM\SOFTWARE\Microsoft\Windows Media Foundation\HardwareMFT
Creating Registry Key: HKLM\SOFTWARE\Microsoft\Windows Media Foundation\HardwareMFT
Registering DLL: C:\Program Files\Common Files\Intel\Media SDK\2\3.0\mfx_mft_h264vd_32.
Registering DLL: C:\Program Files\Common Files\Intel\Media SDK\2\3.0\mfx_mft_h264ve_32.
Registering DLL: C:\Program Files\Common Files\Intel\Media SDK\2\3.0\mfx_mft_mp2vd_32.d
Registering DLL: C:\Program Files\Common Files\Intel\Media SDK\2\3.0\mfx_mft_vc1vd_32.dl
Registering DLL: C:\Program Files\Common Files\Intel\Media SDK\2\3.0\mfx_mft_vpp_32.dll
Deleting Registry Key: HKLM\SOFTWARE\Intel\MediaSDK\Dispatch\hw32-1.1
Creating Process: E:\Graphices\WIN7\8.15.10.2639\Win32\OpenCL\OCLSetup.exe
Click Next to continue.
Next >
Intel® Installation Framework

5. Click “Yes, I want to restart this computer now” then click Finish.

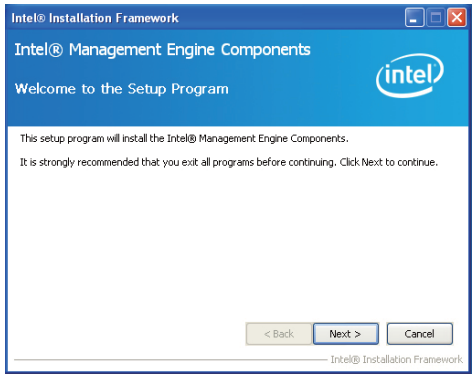
   Restarting the system will allow the new software installation to take effect.


Intel® Installation Framework
Intel® HD Graphics Driver
Setup Is Complete
You must restart this computer for the changes to take effect. Would you like to restart the computer now?
Yes, I want to restart this computer now.
No, I will restart this computer later.
Click Finish, then remove any installation media from the drives.
Finish
Intel® Installation Framework

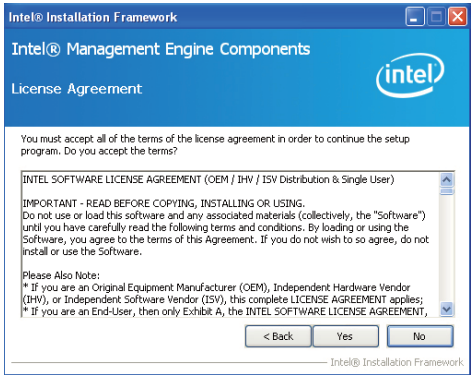
Intel Management Engine Drivers 9.5

To install the driver, click “Intel Management Engine Drivers 9.5” on the main menu.

1. Setup is ready to install the driver. Click Next.


Intel® Installation Framework
Intel® Management Engine Components
Welcome to the Setup Program
This setup program will install the Intel® Management Engine Components.
It is strongly recommended that you exit all programs before continuing. Click Next to continue.
< Back
Next >
Cancel
Intel® Installation Framework

2. Read the license agreement then click Yes.


Intel® Installation Framework
Intel® Management Engine Components
License Agreement
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
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Please Also Note:
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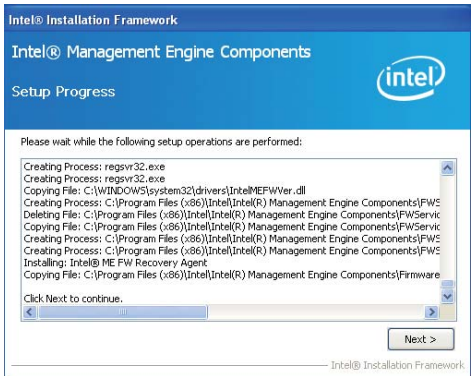
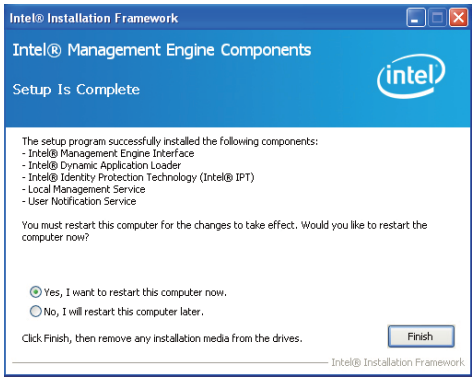
* If you are an End-User, then only Exhibit A, the INTEL SOFTWARE LICENSE AGREEMENT,
< Back
Yes
No
Intel® Installation Framework

3. Setup is currently installing the driver. After installation has completed, click Next.


Intel® Installation Framework
Intel® Management Engine Components
Setup Progress
Please wait while the following setup operations are performed:
Creating Process: regsvr32.exe
Creating Process: regsvr32.exe
Copying File: C:\WINDOWS\system32\drivers\IntelMEFWVer.dll
Creating Process: C:\Program Files (x86)\Intel\Intel(R) Management Engine Components\FWS
Deleting File: C:\Program Files (x86)\Intel\Intel(R) Management Engine Components\FWServic
Copying File: C:\Program Files (x86)\Intel\Intel(R) Management Engine Components\FWServic
Creating Process: C:\Program Files (x86)\Intel\Intel(R) Management Engine Components\FWS
Creating Process: C:\Program Files (x86)\Intel\Intel(R) Management Engine Components\FWS
Installing: Intel® ME FW Recovery Agent
Copying File: C:\Program Files (x86)\Intel\Intel(R) Management Engine Components\Firmware
Click Next to continue.
Next >
Intel® Installation Framework

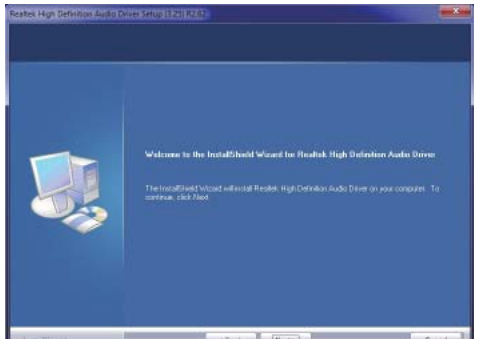
4. After completing installation, click Finish.


Intel® Installation Framework
Intel® Management Engine Components
Setup Is Complete
The setup program successfully installed the following components:
- Intel® Management Engine Interface
- Intel® Dynamic Application Loader
- Intel® Identity Protection Technology (Intel® IPT)
- Local Management Service
- User Notification Service
You must restart this computer for the changes to take effect. Would you like to restart the computer now?
Yes, I want to restart this computer now.
No, I will restart this computer later.
Click Finish, then remove any installation media from the drives.
Finish
Intel® Installation Framework

Audio Drivers

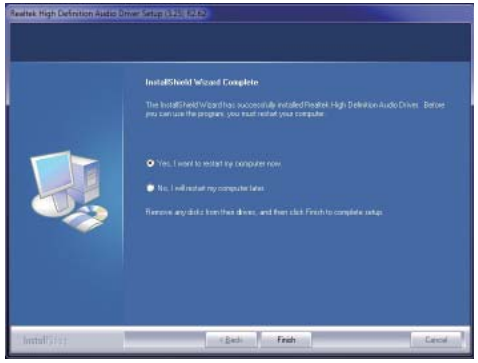
To install the driver, click “Audio Drivers” on the main menu.

1. Setup is ready to install the driver. Click Next.



2. Click “Yes, I want to restart my computer now” then click Finish.

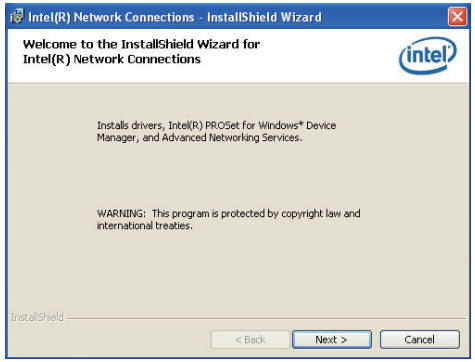
   Restarting the system will allow the new software installation to take effect.


InstallShield Wizard Complete
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
< Back
Finish
Cancel

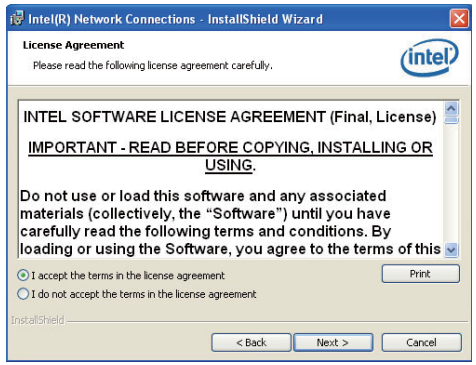
Intel LAN Drivers

To install the driver, click “Intel LAN Drivers” on the main menu.

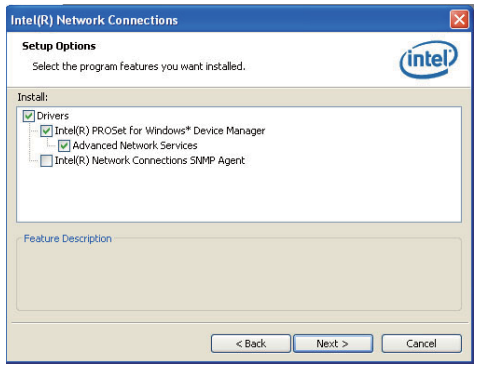
1. Setup is ready to install the driver. Click Next.


Intel(R) Network Connections - InstallShield Wizard
Welcome to the InstallShield Wizard for Intel(R) Network Connections
Installs drivers, Intel(R) PROSet for Windows* Device Manager, and Advanced Networking Services.
WARNING: This program is protected by copyright law and international treaties.
InstallShield
< Back
Next >
Cancel

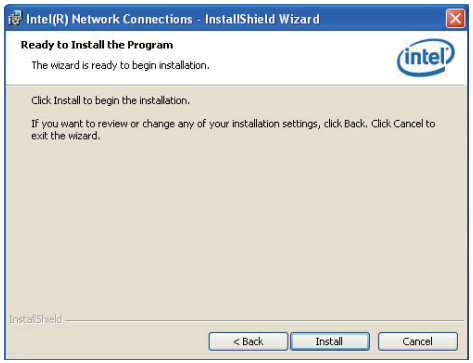
2. Click “I accept the terms in the license agreement” then click “Next”.


Intel(R) Network Connections - InstallShield Wizard
License Agreement
Please read the following license agreement carefully.
INTEL SOFTWARE LICENSE AGREEMENT (Final, License)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the “Software”) until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this
I accept the terms in the license agreement
I do not accept the terms in the license agreement
Print
InstallShield
< Back
Next >
Cancel

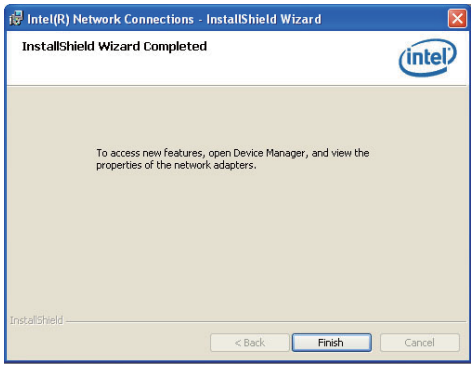
3. Select the program featuers you want installed then click Next.



4. Click Install to begin the installation.


Intel(R) Network Connections - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel

5. After completing installation, click Finish.

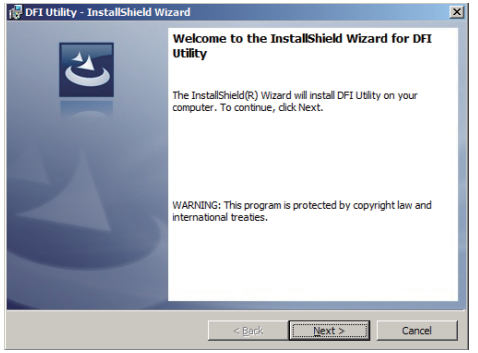

Intel(R) Network Connections - InstallShield Wizard
InstallShield Wizard Completed
To access new features, open Device Manager, and view the properties of the network adapters.
InstallShield
< Back
Finish
Cancel

DFI Utility

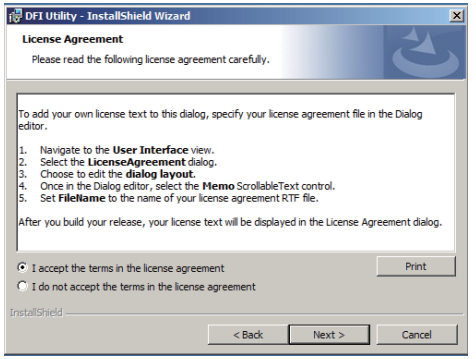
DFI Utility provides information about the board, Watchdog,and DIO. To access the utility, click "DFI Utility" on the main menu.

Note:
If you are using Windows 7, you need to access the operating system as an administrator to be able to install the utility.

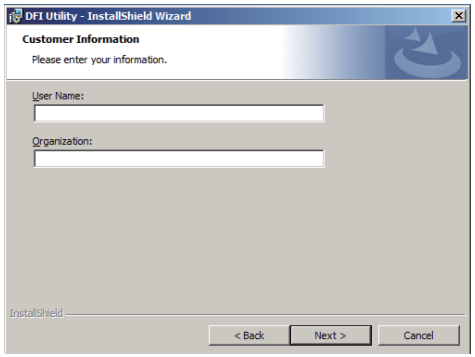
1. Setup is ready to instal the DFI Utility driver Click "Next".


DFI Utility - InstallShield Wizard
Welcome to the InstallShield Wizard for DFI Utility
The InstallShield(R) Wizard will install DFI Utility on your computer. To continue, click Next.
WARNING: This program is protected by copyright law and international treaties.
< Back
Next >
Cancel

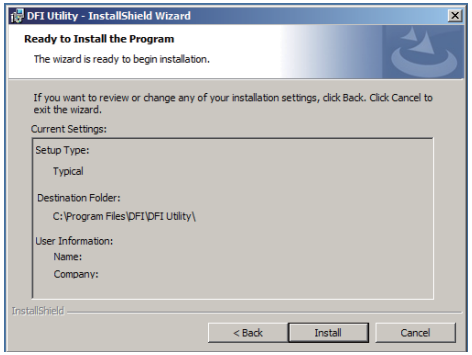
2. Click "I accept the terms in the license agreement" then click "Next".


DFI Utility - InstallShield Wizard
License Agreement
Please read the following license agreement carefully.
To add your own license text to this dialog, specify your license agreement file in the Dialog editor.
1. Navigate to the User Interface view.
2. Select the LicenseAgreement dialog.
3. Choose to edit the dialog layout.
4. Once in the Dialog editor, select the Memo ScrollableText control.
5. Set FileName to the name of your license agreement RTF file.
After you build your release, your license text will be displayed in the License Agreement dialog.
I accept the terms in the license agreement
I do not accept the terms in the license agreement
Print
InstallShield
< Back
Next >
Cancel

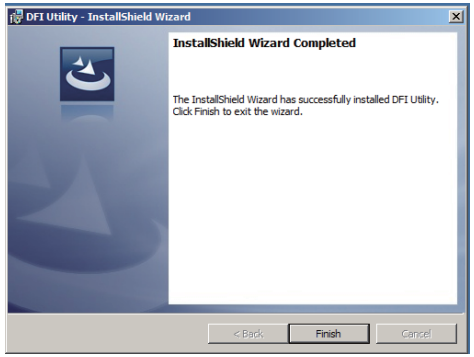
3. Enter “User name” (SB102) and “Organization” information then click “Next”.



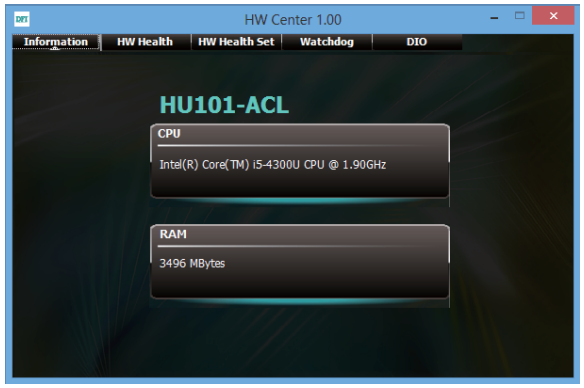
4. Click “Install” to begin the installation.



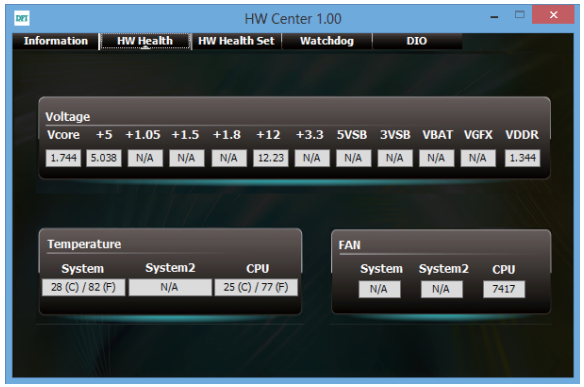
5. After completing installation, click “Finish”.


DFI Utility - InstallShield Wizard
InstallShield Wizard Completed
The InstallShield Wizard has successfully installed DFI Utility. Click Finish to exit the wizard.
< Back
Finish
Cancel

The DFI Utility icon will appear on the desktop. Double-click the icon to open the utility.

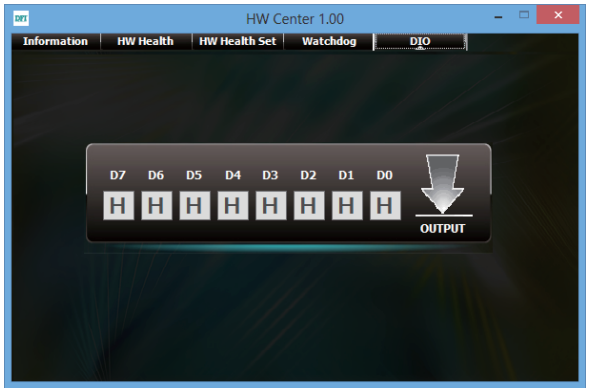


Information

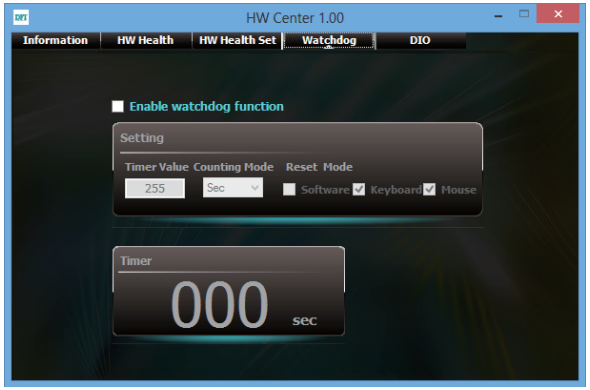


HW Health

HW Health Set



DIO

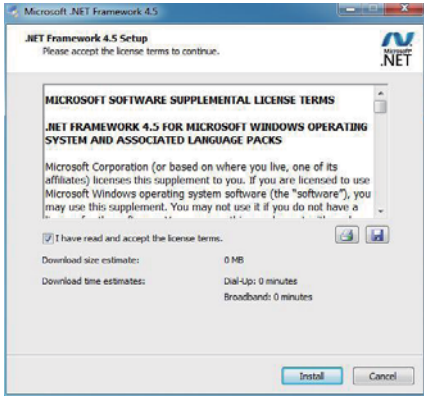


WatchDog

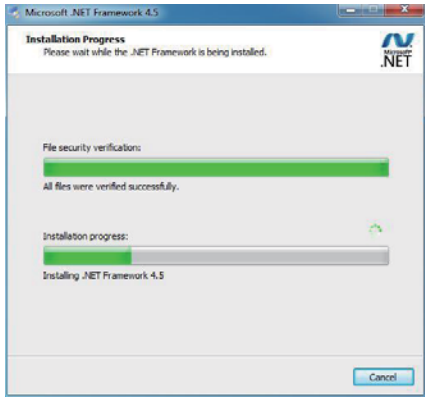
Microsoft Framework 4.5

To install the utility, click “Microsoft Framework 4.5” on the main menu.

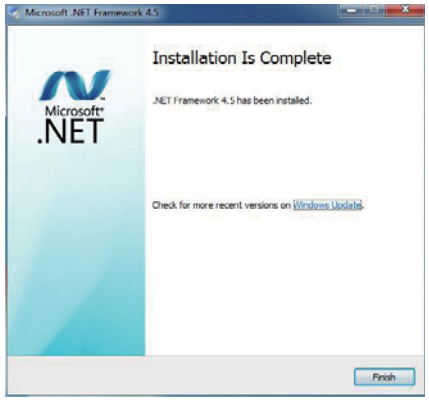
1. Read and accept the license agreement. Then, click “Installation“.


Microsoft .NET Framework 4.5
.NET Framework 4.5 Setup
Please accept the license terms to continue.
MICROSOFT SOFTWARE SUPPLEMENTAL LICENSE TERMS
.NET FRAMEWORK 4.5 FOR MICROSOFT WINDOWS OPERATING SYSTEM AND ASSOCIATED LANGUAGE PACKS
Microsoft Corporation (or based on where you live, one of its affiliates) licenses this supplement to you. If you are licensed to use Microsoft Windows operating system software (the "software"), you may use this supplement. You may not use it if you do not have a
I have read and accept the license terms.
Download size estimate:
0 MB
Download time estimates:
Dial-Up: 0 minutes
Broadband: 0 minutes
Install
Cancel

2. Setup is installing the driver.



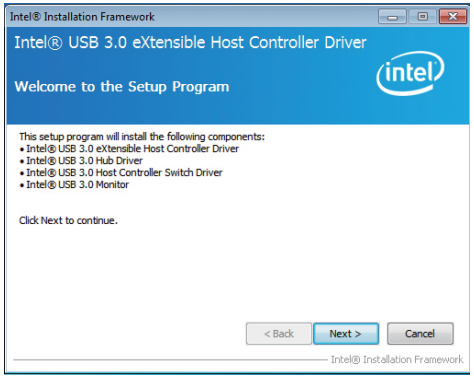
3. After completing installation, click Finish.


Microsoft .NET Framework 4.5
Installation Is Complete
.NET Framework 4.5 has been installed.
Check for more recent versions on Windows Update.
Finish

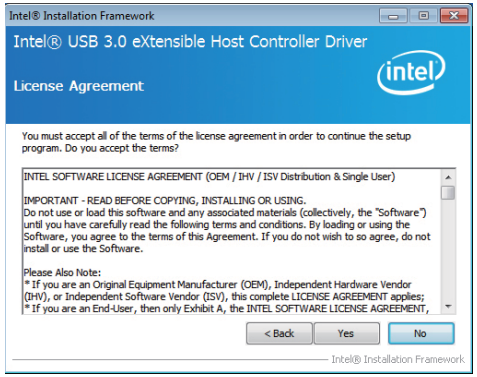
Intel USB 3.0 Drivers (For Windows 7 Only)

To install the driver, click “Intel USB 3.0 Driver” on the main menu.

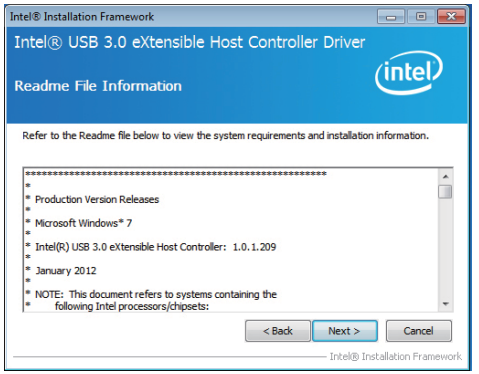
1. Setup is ready to install the driver. Click Next.


Intel® Installation Framework
Intel® USB 3.0 eXtensible Host Controller Driver
Welcome to the Setup Program
This setup program will install the following components:
• Intel® USB 3.0 eXtensible Host Controller Driver
• Intel® USB 3.0 Hub Driver
• Intel® USB 3.0 Host Controller Switch Driver
• Intel® USB 3.0 Monitor
Click Next to continue.
< Back
Next >
Cancel
Intel® Installation Framework

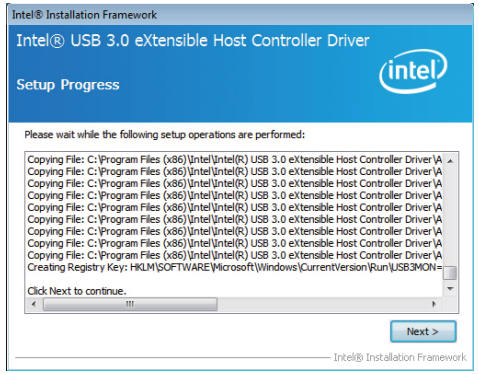
2. Read the license agreement then click Yes.


Intel® Installation Framework
Intel® USB 3.0 eXtensible Host Controller Driver
License Agreement
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
* If you are an End-User, then only Exhibit A, the INTEL SOFTWARE LICENSE AGREEMENT,
< Back
Yes
No
Intel® Installation Framework

3. Go through the readme document for more installation tips then click Next.


Intel® Installation Framework
Intel® USB 3.0 eXtensible Host Controller Driver
Readme File Information
Refer to the Readme file below to view the system requirements and installation information.
* Production Version Releases
* Microsoft Windows* 7
* Intel(R) USB 3.0 eXtensible Host Controller: 1.0.1.209
* January 2012
* NOTE: This document refers to systems containing the following Intel processors/chipsets:
< Back
Next >
Cancel
Intel® Installation Framework

4. Setup is currently installing the driver. After installation has completed, click Next.


Intel® Installation Framework
Intel® USB 3.0 eXtensible Host Controller Driver
Setup Progress
Please wait while the following setup operations are performed:
Copying File: C:\Program Files (x86)\Intel\Intel(R) USB 3.0 eXtensible Host Controller Driver\A
Creating Registry Key: HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Run\USB3MON=
Click Next to continue.
Next >
Intel® Installation Framework

5. After completing installation, click Finish.

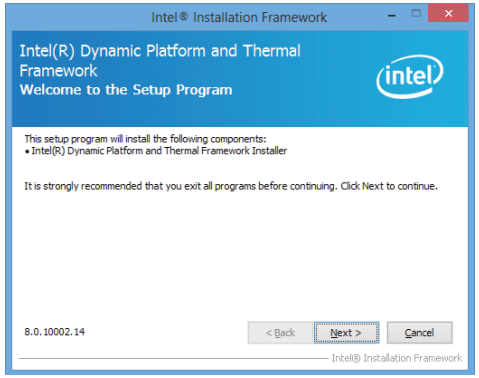
Intel® Installation Framework
Intel® USB 3.0 eXtensible Host Controller Driver
Setup Is Complete
You must restart this computer for the changes to take effect. Would you like to restart the computer now?
Yes, I want to restart this computer now.
No, I will restart this computer later.
Click Finish, then remove any installation media from the drives.
Finish
Intel® Installation Framework

Intel Dynamic Platform and Thermal Framework 8.0

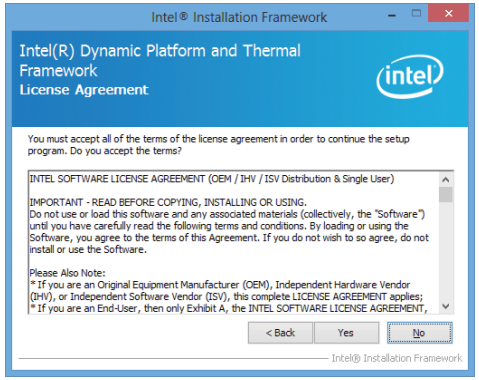
The Intel Dynamic Platform and Thermal Framework Technology enables the control of power and temperature management for the system protection.

To install the driver, click “Intel Dynamic Platform and Thermal Framework 8.0” on the main menu.

1. Setup is now ready to install the utility. Exit all programs before continuing and click Next to continue.


Intel® Installation Framework
Intel(R) Dynamic Platform and Thermal Framework
Welcome to the Setup Program
This setup program will install the following components:
• Intel(R) Dynamic Platform and Thermal Framework Installer
It is strongly recommended that you exit all programs before continuing. Click Next to continue.
8.0.10002.14
< Back
Next >
Cancel
Intel® Installation Framework

2. Read the license agreement and then click Yes.


Intel® Installation Framework
Intel(R) Dynamic Platform and Thermal Framework
License Agreement
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
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Please Also Note:
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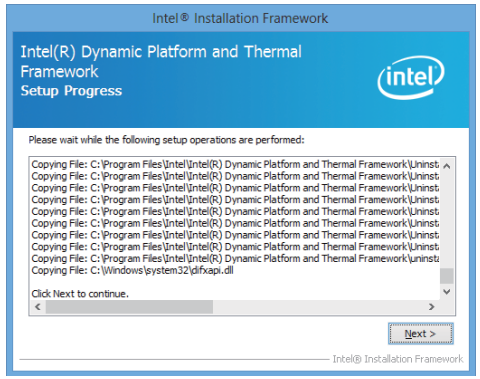
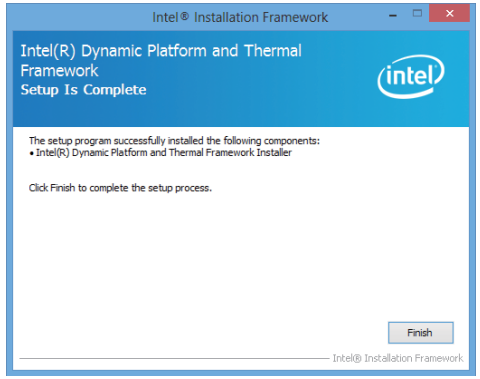
* If you are an End-User, then only Exhibit A, the INTEL SOFTWARE LICENSE AGREEMENT,
< Back
Yes
No
Intel® Installation Framework

3. After the setup progress finishes, click Next to continue..


Intel® Installation Framework
Intel(R) Dynamic Platform and Thermal Framework
Setup Progress
Please wait while the following setup operations are performed:
Copying File: C:\Program Files\Intel\Intel(R) Dynamic Platform and Thermal Framework\Uninst
Copying File: C:\Windows\system32\dlfxapi.dll
Click Next to continue.
Next >
Intel® Installation Framework

4. Click Finish to complete the setup process.

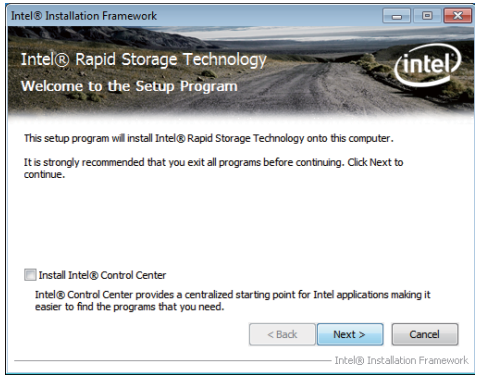

Intel® Installation Framework
Intel(R) Dynamic Platform and Thermal Framework
Setup Is Complete
The setup program successfully installed the following components:
• Intel(R) Dynamic Platform and Thermal Framework Installer
Click Finish to complete the setup process.
Finish
Intel® Installation Framework

Intel Rapid Storage Technology

The Intel Rapid Storage Technology is a utility that allows you to monitor the current status of the SATA drives. It enables enhanced performance and power management for the storage subsystem.

To install the driver, click “Intel Rapid Storage Technology” on the main menu.

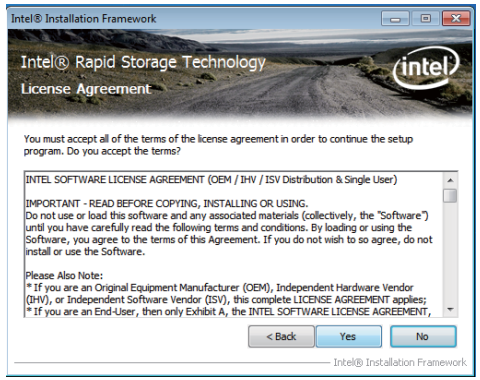
1. Setup is now ready to install the utility. Click Next.


Intel® Installation Framework
Intel® Rapid Storage Technology
Welcome to the Setup Program
This setup program will install Intel® Rapid Storage Technology onto this computer.
It is strongly recommended that you exit all programs before continuing. Click Next to continue.
Install Intel® Control Center
Intel® Control Center provides a centralized starting point for Intel applications making it easier to find the programs that you need.
< Back
Next >
Cancel
Intel® Installation Framework

2. Read the warning then click Yes.

Intel® Installation Framework
Intel® Rapid Storage Technology
Warning
The Intel® Rapid Storage Technology driver you are about to install may be used to control the hard drive that this computer boots from or to control a hard drive that contains important data. Therefore, you will not be able to uninstall this driver after installation. However, you will be able to uninstall the non-critical components of this software such as the User Interface, Event Monitor Service, and program shortcuts.
Click Next to continue, or click Cancel to exit the setup program.
< Back
Next >
Cancel
Intel® Installation Framework

3. Read the license agreement then click Yes.


Intel® Installation Framework
Intel® Rapid Storage Technology
License Agreement
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
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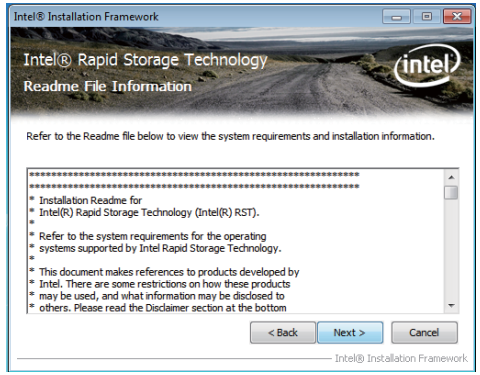
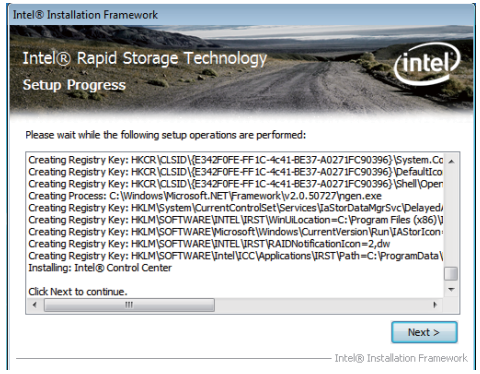
< Back
Yes
No
Intel® Installation Framework

4. Go through the readme document for system requirements and installation tips then click Next.


Intel® Installation Framework
Intel® Rapid Storage Technology
Readme File Information
Refer to the Readme file below to view the system requirements and installation information.
* Installation Readme for
* Intel(R) Rapid Storage Technology (Intel(R) RST).
* Refer to the system requirements for the operating
* systems supported by Intel Rapid Storage Technology.
* This document makes references to products developed by
* Intel. There are some restrictions on how these products
* may be used, and what information may be disclosed to
* others. Please read the Disclaimer section at the bottom
< Back
Next >
Cancel
Intel® Installation Framework

5. Setup is now installing the utility. Click Next to continue.


Intel® Installation Framework
Intel® Rapid Storage Technology
Setup Progress
Please wait while the following setup operations are performed:
Creating Registry Key: HKCR\CLSID\{E342F0FE-FF1C-4c41-BE37-A0271FC90396}\System.Cc
Creating Registry Key: HKCR\CLSID\{E342F0FE-FF1C-4c41-BE37-A0271FC90396}\DefaultIco
Creating Registry Key: HKCR\CLSID\{E342F0FE-FF1C-4c41-BE37-A0271FC90396}\Shell\Oper
Creating Process: C:\Windows\Microsoft.NET\Framework\v2.0.50727\ngen.exe
Creating Registry Key: HKLM\System\CurrentControlSet\Services\IaStorDataMgrSvc\Delayed
Creating Registry Key: HKLM\SOFTWARE\INTEL\IRST\WinUILocation=C:\Program Files (x86)\I
Creating Registry Key: HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Run\IAStorIcon
Creating Registry Key: HKLM\SOFTWARE\INTEL\IRST\RAIDNotificationIcon=2,dw
Creating Registry Key: HKLM\SOFTWARE\Intel\ICC\Applications\IRST\Path=C:\ProgramData\
Installing: Intel® Control Center
Click Next to continue.
Next >
Intel® Installation Framework

6. Click “Yes, I want to restart my computer now” then click Finish.

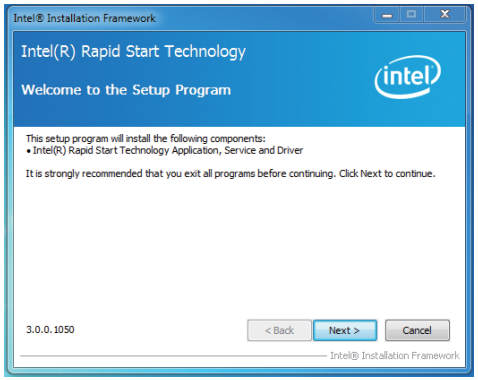
Restarting the system will allow the new software installation to take effect.

Intel® Installation Framework
Intel® Rapid Storage Technology
Setup Is Complete
You must restart this computer for the changes to take effect. Would you like to restart the computer now?
Yes, I want to restart this computer now.
No, I will restart this computer later.
Click Finish, then remove any installation media from the drives.
Finish
Intel® Installation Framework

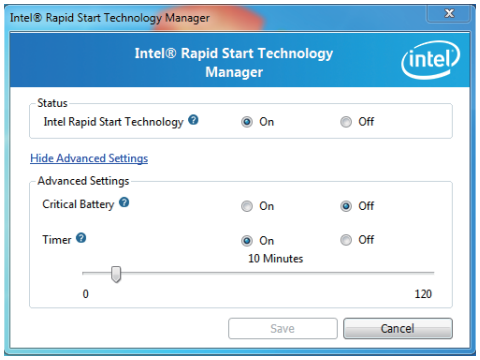
Intel Rapid Start Technology

The Intel Rapid Start Technology is a utility that allows your system to wake up and run faster. To install the driver, click “Intel Rapid Start Technology” on the main menu.

1. Setup is now ready to install the utility. Click Next.


Intel® Installation Framework
Intel(R) Rapid Start Technology
Welcome to the Setup Program
This setup program will install the following components:
• Intel(R) Rapid Start Technology Application, Service and Driver
It is strongly recommended that you exit all programs before continuing. Click Next to continue.
3.0.0.1050
< Back
Next >
Cancel
Intel® Installation Framework

2. Click ON and select the Advanced Settings to enable the Intel Rapid Start Technology. Then, click Save.



F6 Floppy (For Windows 7 Only)

This is used to create a floppy driver diskette needed when you install Windows® XP using the F6 installation method. This will allow you to install the operating system onto a hard drive when in AHCI mode.

1. Insert a blank floppy diskette.

2. Locate for the drivers in the CD then copy them to the floppy diskette. The CD includes drivers for both 32-bit and 64-bit operating systems. The path to the drivers are shown below.

   32-bit

   CD Drive:\AHCI_RAID\F6FLOPPY\f6flpy32

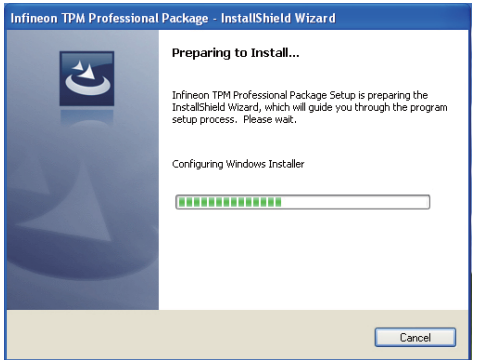
   64-bit

   CD Drive:\AHCI_RAID\F6FLOPPY\f6flpy64

Infineon TPM Driver and Tool (optional)

To install the driver, click “Infineon TPM driver and tool (option)” on the main menu.

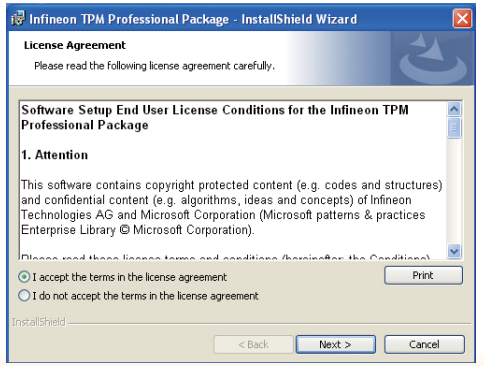
1. The setup program is preparing to install the driver.


Infineon TPM Professional Package - InstallShield Wizard
Preparing to Install...
Infineon TPM Professional Package Setup is preparing the InstallShield Wizard, which will guide you through the program setup process. Please wait.
Configuring Windows Installer
Cancel

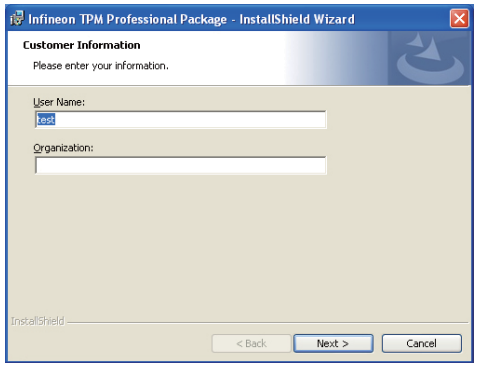
2. The setup program is now ready to install the utility. Click Next.

Infineon TPM Professional Package - InstallShield Wizard
Welcome to the InstallShield Wizard for Infineon TPM Professional Package
Version 4.3.100.3287
The InstallShield(R) Wizard will install Infineon TPM Professional Package on your computer. To continue, click Next.
It is recommended that you close all other applications before starting Setup.
WARNING: This program is protected by copyright law and international treaties.
< Back
Next >
Cancel

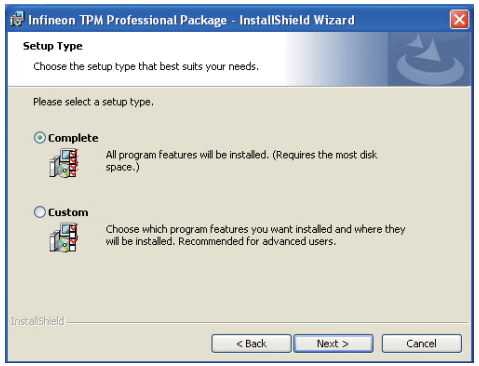
3. Click “I accept the terms in the license agreement” and then click “Next”.


Infineon TPM Professional Package - InstallShield Wizard
License Agreement
Please read the following license agreement carefully.
Software Setup End User License Conditions for the Infineon TPM Professional Package
1. Attention
This software contains copyright protected content (e.g. codes and structures) and confidential content (e.g. algorithms, ideas and concepts) of Infineon Technologies AG and Microsoft Corporation (Microsoft patterns & practices Enterprise Library © Microsoft Corporation).
I accept the terms in the license agreement
I do not accept the terms in the license agreement
Print
InstallShield
< Back
Next >
Cancel

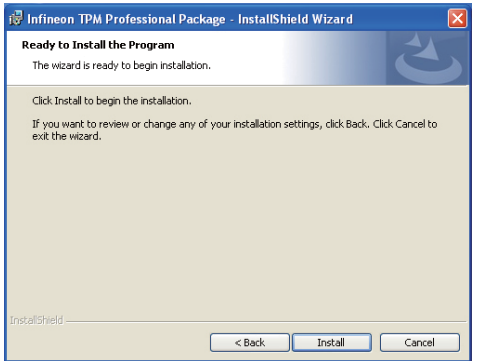
4. Enter the necessary information and then click Next.



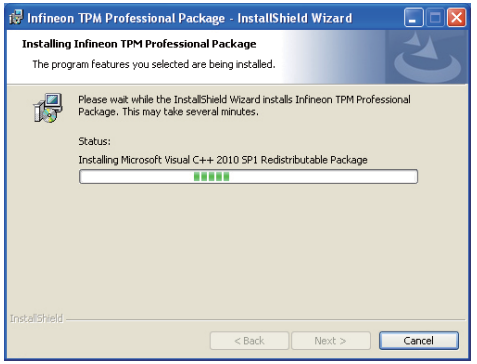
5. Select a setup type and then click Next.


Infineon TPM Professional Package - InstallShield Wizard
Setup Type
Choose the setup type that best suits your needs.
Please select a setup type.
Complete
All program features will be installed. (Requires the most disk space.)
Custom
Choose which program features you want installed and where they will be installed. Recommended for advanced users.
InstallShield
< Back
Next >
Cancel

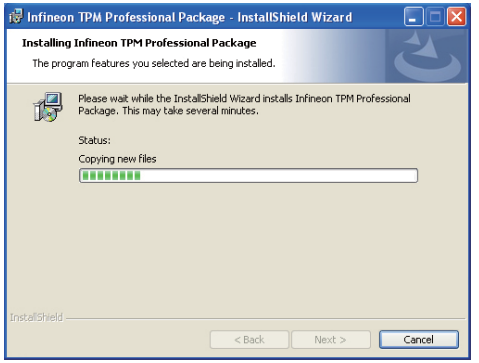
6. Click Install.


Infineon TPM Professional Package - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel

7. TPM requires installing the Microsoft Visual C++ package prior to installing the utility. Click Install.


Infineon TPM Professional Package - InstallShield Wizard
Installing Infineon TPM Professional Package
The program features you selected are being installed.
Please wait while the InstallShield Wizard installs Infineon TPM Professional Package. This may take several minutes.
Status:
Installing Microsoft Visual C++ 2010 SP1 Redistributable Package
InstallShield
< Back
Next >
Cancel

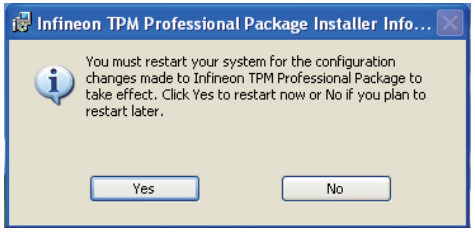
8. The setup program is currently installing the Microsoft Visual C++ package.


Infineon TPM Professional Package - InstallShield Wizard
Installing Infineon TPM Professional Package
The program features you selected are being installed.
Please wait while the InstallShield Wizard installs Infineon TPM Professional Package. This may take several minutes.
Status:
Copying new files
InstallShield
< Back
Next >
Cancel

9. Click Finish.

Infineon TPM Professional Driver Package - InstallShield Wizard
InstallShield Wizard Completed
The InstallShield Wizard has successfully installed Infineon TPM Professional Driver Package. Click Finish to exit the wizard.
Show the readme file
< Back
Finish
Cancel

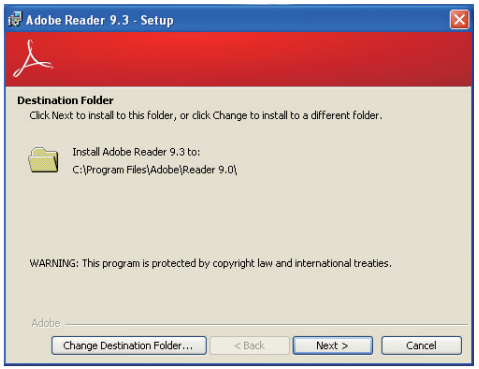
10. Click “Yes“ to restart your system.


Infineon TPM Professional Package Installer Info...
You must restart your system for the configuration changes made to Infineon TPM Professional Package to take effect. Click Yes to restart now or No if you plan to restart later.
Yes
No

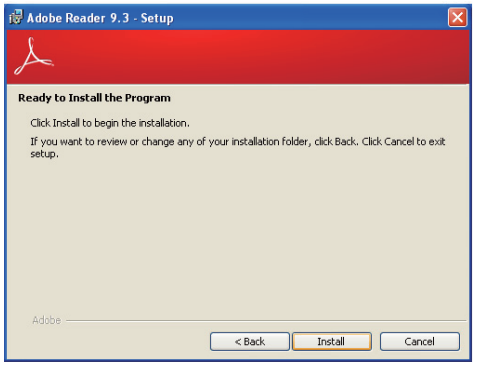
Adobe Acrobat Reader 9.3

To install the reader, click “Adobe Acrobat Reader 9.3” on the main menu.

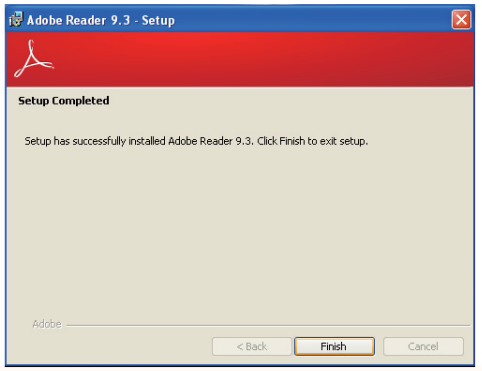
1. Click Next to install or click Change Destination Folder to select another folder.


Adobe Reader 9.3 - Setup
Destination Folder
Click Next to install to this folder, or click Change to install to a different folder.
Install Adobe Reader 9.3 to:
C:\Program Files\Adobe\Reader 9.0\
WARNING: This program is protected by copyright law and international treaties.
Adobe
Change Destination Folder...
< Back
Next >
Cancel

2. Click Install to begin installation.


Adobe Reader 9.3 - Setup
Ready to Install the Program
Click Install to begin the installation.
If you want to review or change any of your installation folder, click Back. Click Cancel to exit setup.
Adobe
< Back
Install
Cancel

3. Click Finish to exit installation.



Chapter 5 - Digital I/O Programming Guide

Register Description

The Input Port Register (register 0) reflects the incoming logic levels of the pins, regardless of whether the pin if defined as an input or output by the Configuration Register. They act only on the red operation. Writes to this register have no effect. The default value (X) is determined by the externally applied logic level. Before a red operation, a write transmission is sent with the command byte to indicate to the I²C device that the Input Port Regiser will be accessed next.

Register 0 (Input Port Register)

BIT	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
DEFAULT	X	X	X	X	X	X	X	X

The Onput Port Register (register 1) shows the outgoing logic levels of the pins defined as outputs by the Configuration Register. Bit values in this register have no effect on pins defined as inputs. In turns, reads from this register reflect the value that is in the flip-flop contolling the output selection, not the actual pin value.

Register 1 (Onput Port Register)

BIT	O-7	O-6	O-5	O-4	O-3	O-2	O-1	O-0
DEFAULT	1	1	1	1	1	1	1	1

The Polarity Inversion Register (register 2) allows polarity inversion of the pins defined as inputs by the Configuration Register. If a bit in this register is set (written with 1), the corresponding port pin's polarity is inverted. If a bit in this register is clear (written with a 0), the corresponding port pin's original polarity is retained.

Register 2 (Polarity Inversion Register)

BIT	N-7	N-6	N-5	N-4	N-3	N-2	N-1	N-0
DEFAULT	0	0	0	0	0	0	0	0

The Configuration Register (register 3) configures the direction of the I/O pins. If a bit in this register is set to 1, the corresponding port pin is enabled as an input with a high-impedence output driver. If a bit in this register is cleared to 0, the corresponding port is enabled as an input.

Register 3 (Configuration Register)

BIT	C-7	C-6	C-5	C-4	C-3	C-2	C-1	C-0
DEFAULT	1	1	1	1	1	1	1	1

Function Description

I2CWriteByte(SlaveAddr, SubAddr, Data):
Write a Byte data to a specified I2C Device.

I2CReadByte(SlaveAddr, SubAddr, *Data):
Read a Byte data from a specified I2C Device.

SetBit(*Data, Bit) :
Set Data bit n as “1”.

ClrBit(*Data, Bit) :
Set Data bit n as “0”.

GetBit(Data, Bit) :
Return the value of data bit n.

Sample Code

GPIO Configuration

```
#define SLAVE_ADDR              0x42
#define INPUT_PORT              0x00
#define OUTPUT_PORT             0x01
#define INVERSION_PORT          0x02
#define COMFIG_PORT             0x03

GpioConfig(int PinNum, int Mode)
{
    BYTE Data;
    BYTE TempPinNum = PinNum%8;

   //Pin0-7 Input/Output Configuration
   I2C_ReadByte(SLAVE_ADDR, CONFIG_PORT, &Data);
   if(Mode == 1){SetBit(&Data, TempPinNum);} //Input
   else          {ClrBit(&Data, TempPinNum);} //Output
   I2C_WriteByte(SLAVE_ADDR, CONFIG_PORT, Data);

   return 1;
```

GPIO Output Process

```
#define SLAVE_ADDR              0x42
#define INPUT_PORT              0x00
#define OUTPUT_PORT             0x01
#define INVERSION_PORT          0x02
#define COMFIG_PORT             0x03

GpioOut(int PinNum, int Level)
{
    BYTE Data;
    BYTE TempPinNum = PinNum%8;

    //Pin0-7
    I2C_ReadByte(SLAVE_ADDR, OUTPUT_PORT, &Data);
    if(Level == 0){ClrBit(&Data, TempPinNum);}
    else           {SetBit(&Data, TempPinNum);}
    I2C_WriteByte(SLAVE_ADDR, OUTPUT_PORT, Data);

    return 1;
```

GPIO Iutput Process

```
#define SLAVE_ADDR              0x42
#define INPUT_PORT              0x00
#define OUTPUT_PORT             0x01
#define INVERSION_PORT          0x02
#define COMFIG_PORT             0x03

GpioIn(int PinNum, int *Status)
{
    BYTE Data;
    BYTE Group = PinNum/8;
    BYTE TempPinNum = PinNum%8;

    //Pin0-7
    I2C_ReadByte(SLAVE_ADDR, INPUT_PORT, &Data);
    *Status = GetBit(Data, TempPinNum);

    return 1;
```

Chapter 6 - RAID

The system board allows configuring RAID on Serial ATA drives. It supports RAID 0, RAID 1, RAID 5 and RAID 10.

RAID Levels

RAID 0 (Striped Disk Array without Fault Tolerance)

RAID 0 uses two new identical hard disk drives to read and write data in parallel, interleaved stacks. Data is divided into stripes and each stripe is written alternately between two disk drives. This improves the I/O performance of the drives at different channel; however it is not fault tolerant. A failed disk will result in data loss in the disk array.

RAID 1 (Mirroring Disk Array with Fault Tolerance)

RAID 1 copies and maintains an identical image of the data from one drive to the other drive. If a drive fails to function, the disk array management software directs all applications to the other drive since it contains a complete copy of the drive's data. This enhances data protection and increases fault tolerance to the entire system. Use two new drives or an existing drive and a new drive but the size of the new drive must be the same or larger than the existing drive.

RAID 5

RAID 5 stripes data and parity information across hard drives. It is fault tolerant and provides better hard drive performance and more storage capacity.

Settings

To enable the RAID function, the following settings are required.

1. Connect the Serial ATA drives.
2. Configure Serial ATA in the AMI BIOS.
3. Configure RAID in the RAID BIOS.
4. Install the RAID driver during OS installation.
5. Install the Intel Rapid Storage Drivers.

Step 1: Connect the Serial ATA Drives

Refer to chapter 2 for details on connecting the Serial ATA drives.

Important:

1. Make sure you have installed the Serial ATA drives and connected the data cables otherwise you won't be able to enter the RAID BIOS utility.
2. Treat the cables with extreme caution especially while creating RAID. A damaged cable will ruin the entire installation process and operating system. The system will not boot and you will lost all data in the hard drives. Please give special attention to this warning because there is no way of recovering back the data.

Step 2: Configure Serial ATA in the AMI BIOS

1. Power-on the system then press <Del> to enter the main menu of the AMI BIOS.
2. Configure Serial ATA in the appropriate fields.
3. Save the changes in the Save & Exit menu.
4. Reboot the system.

Step 3: Configure RAID in the RAID BIOS

When the system powers-up and all drives have been detected, the Intel RAID BIOS status message screen will appear. Press the <Ctrl> and <I> keys simultaneously to enter the utility. The utility allows you to build a RAID system on Serial ATA drives.

Step 4: Install the RAID Driver During OS Installation

The RAID driver must be installed during the Windows® XP or Windows® 2000 installation using the F6 installation method. This is required in order to install the operating system onto a hard drive or RAID volume when in RAID mode or onto a hard drive when in AHCI mode.

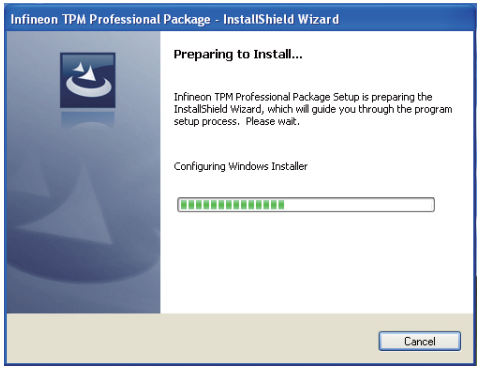
1. Start Windows Setup by booting from the installation CD.
2. Press <F6> when prompted in the status line with the 'Press F6 if you need to install a third party SCSI or RAID driver' message.
3. Press <S> to "Specify Additional Device".
4. At this point you will be prompted to insert a floppy disk containing the RAID driver. Insert the RAID driver diskette.
5. Locate for the drive where you inserted the diskette then select RAID or AHCI controller that corresponds to your BIOS setup. Press <Enter> to confirm.

You have successfully installed the driver. However you must continue installing the OS. Leave the floppy disk in the floppy drive until the system reboots itself because Windows setup will need to copy the files again from the floppy disk to the Windows installation folders. After Windows setup has copied these files again, remove the floppy diskette so that Windows setup can reboot as needed.

Step 5: Install the Intel Rapid Storage Technology Utility

The Intel Rapid Storage Technology Utility can be installed from within Windows. It allows RAID volume management (create, delete, migrate) from within the operating system. It will also display useful SATA device and RAID volume information. The user interface, tray icon service and monitor service allow you to monitor the current status of the RAID volume and/or SATA drives. It enables enhanced performance and power management for the storage subsystem.

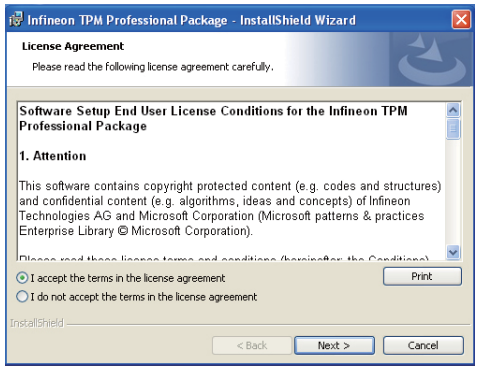
1. Insert the provided CD into an optical drive.
2. Click "Intel Rapid Storage Technology Utility" on the main menu.
3. Setup is ready to install the utility. Click Next.


Infineon TPM Professional Package - InstallShield Wizard
Preparing to Install...
Infineon TPM Professional Package Setup is preparing the InstallShield Wizard, which will guide you through the program setup process. Please wait.
Configuring Windows Installer
Cancel

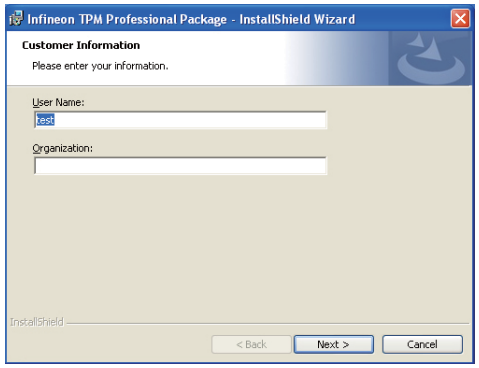
4. Read the license agreement and click "I accept the terms in the License Agreement." Then, click Next.

Infineon TPM Professional Package - InstallShield Wizard
Welcome to the InstallShield Wizard for Infineon TPM Professional Package
Version 4.3.100.3287
The InstallShield(R) Wizard will install Infineon TPM Professional Package on your computer. To continue, click Next.
It is recommended that you close all other applications before starting Setup.
WARNING: This program is protected by copyright law and international treaties.
< Back
Next >
Cancel

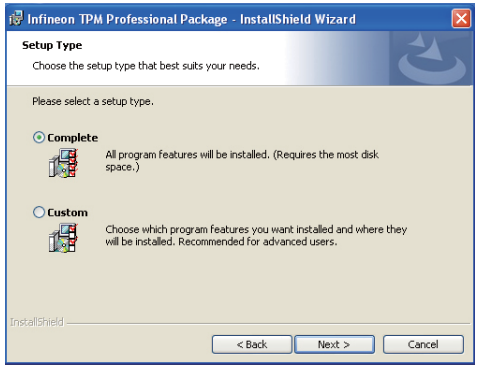
5. Go through the readme document to view system requirements and installation information then click Next.


Infineon TPM Professional Package - InstallShield Wizard
License Agreement
Please read the following license agreement carefully.
Software Setup End User License Conditions for the Infineon TPM Professional Package
1. Attention
This software contains copyright protected content (e.g. codes and structures) and confidential content (e.g. algorithms, ideas and concepts) of Infineon Technologies AG and Microsoft Corporation (Microsoft patterns & practices Enterprise Library © Microsoft Corporation).
I accept the terms in the license agreement
I do not accept the terms in the license agreement
Print
InstallShield
< Back
Next >
Cancel

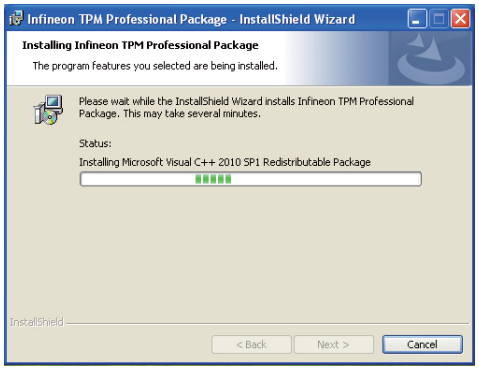
6. Click Next to install to the default folder or click change to choose another destination folder.



7. Confirm the installation and click Next.


Infineon TPM Professional Package - InstallShield Wizard
Setup Type
Choose the setup type that best suits your needs.
Please select a setup type.
Complete
All program features will be installed. (Requires the most disk space.)
Custom
Choose which program features you want installed and where they will be installed. Recommended for advanced users.
InstallShield
< Back
Next >
Cancel

8. Click “Yes, I want to restart this computer now” to complete the installation and then click Finish.


Infineon TPM Professional Package - InstallShield Wizard
Installing Infineon TPM Professional Package
The program features you selected are being installed.
Please wait while the InstallShield Wizard installs Infineon TPM Professional Package. This may take several minutes.
Status:
Installing Microsoft Visual C++ 2010 SP1 Redistributable Package
InstallShield
< Back
Next >
Cancel

Chapter 7 - Intel AMT Settings

Overview

Intel Active Management Technology (Intel® AMT) combines hardware and software solution to provide maximum system defense and protection to networked systems.

The hardware and software information are stored in non-volatile memory. With its built-in manageability and latest security applications, Intel® AMT provides the following functions.

- **Discover**

Allows remote access and management of networked systems even while PCs are powered off; significantly reducing desk-side visits.

- **Repair**

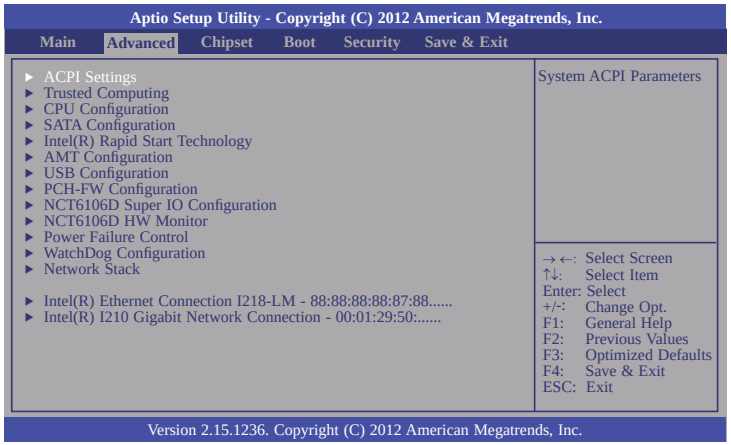
Remotely repair systems after OS failures. Alerting and event logging help detect problems quickly to reduce downtime.

- **Protect**

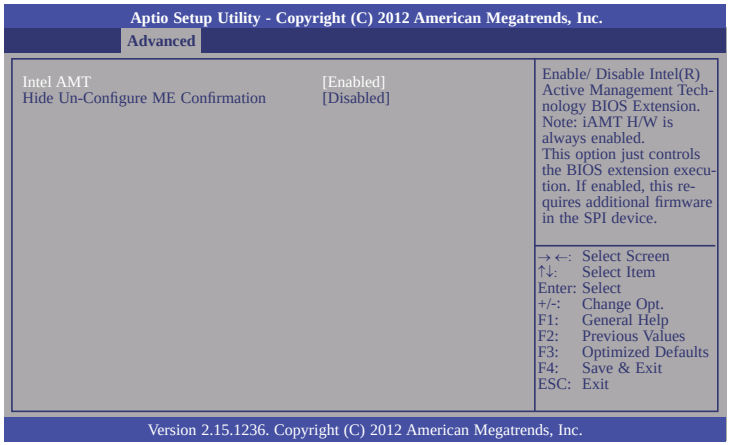
Intel AMT's System Defense capability remotely updates all systems with the latest security software. It protects the network from threats at the source by proactively blocking incoming threats, reactively containing infected clients before they impact the network, and proactively alerting when critical software agents are removed.

Enable Intel® AMT in the AMI BIOS

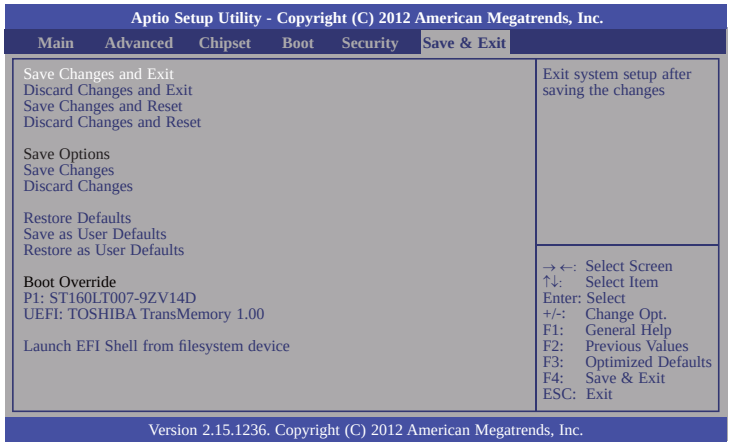
1. Power-on the system then press <Del> to enter the main menu of the AMI BIOS.
2. In the **Advanced** menu, select **AMT Configuration**.



3. In the **Advanced** menu, select **Enable** in the **AMT** field.


Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Advanced
Intel AMT [Enabled]
Hide Un-Configure ME Confirmation [Disabled]
Enable/ Disable Intel(R) Active Management Technology BIOS Extension. Note: iAMT H/W is always enabled. This option just controls the BIOS extension execution. If enabled, this requires additional firmware in the SPI device.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

4. In the **Save & Exit** menu, select **Save Changes and Reset** then select **OK**.

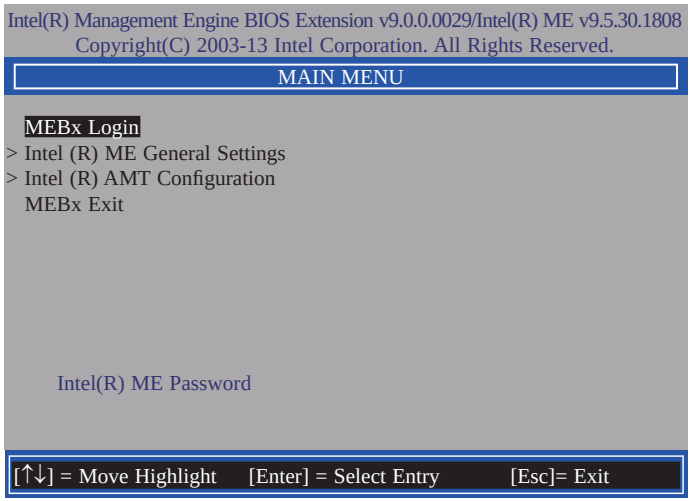


Enable Intel® AMT in the Intel® Management Engine BIOS Extension (MEBX) Screen

1. When the system reboots, the following message will be displayed. Press **<Ctrl-P>** as soon as the message is displayed; as this message will be displayed for only a few seconds.

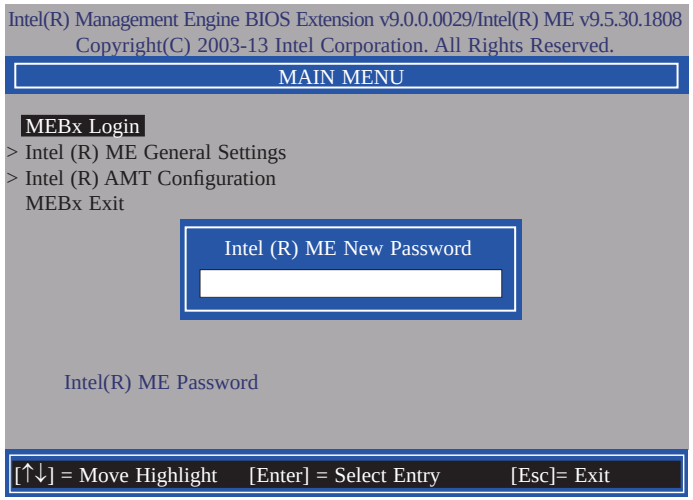
American Megatrends
Version 2. 15. 1236. Copyright (C) 2012 American Megatrends, Inc.
BIOS Date: 12/17/2013 21:22:35 Ver: 1AQQW025
Press <Ctrl+P> to enter MEBX setup menu
Press <Ctrl+Alt+F1> Remote Assistance
Press <Del> to enter setup

2. You will be prompted for a password. The default password is "**admin**". Enter the default password in the space provided under Intel(R) ME Password then press Enter.

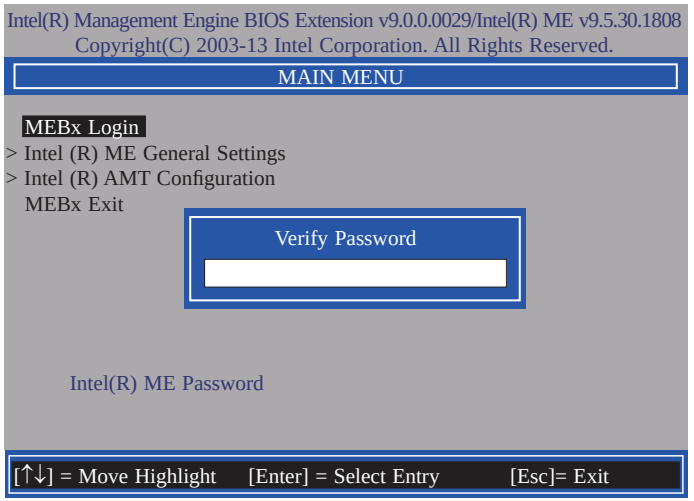

Intel(R) Management Engine BIOS Extension v9.0.0.0029/Intel(R) ME v9.5.30.1808
Copyright(C) 2003-13 Intel Corporation. All Rights Reserved.
MAIN MENU
MEBx Login
> Intel (R) ME General Settings
> Intel (R) AMT Configuration
MEBx Exit
Intel(R) ME Password
[↑↓] = Move Highlight [Enter] = Select Entry [Esc]= Exit

3. Enter a new password in the space provided under Intel(R) ME New Password then press Enter. The password must include:

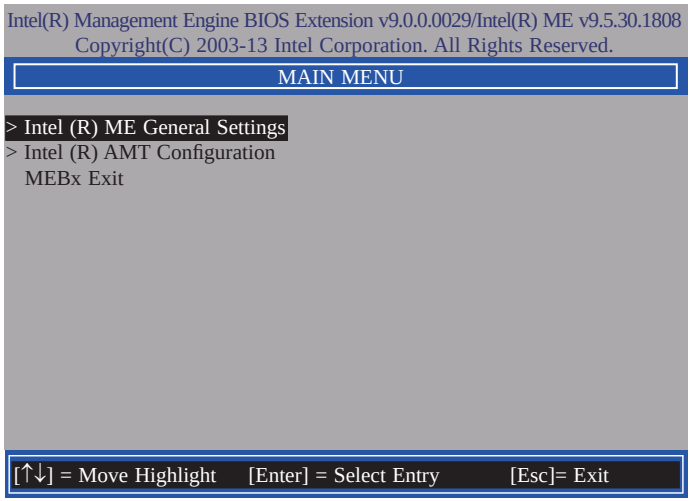
   - 8-32 characters
   - Strong 7-bit ASCII characters excluding **:** , and **"** characters
   - At least one digit character (0, 1, ...9)
   - At least one 7-bit ASCII non alpha-numeric character, above 0x20, (e.g. !, $, ;)
   - Both lower case and upper case characters


Intel(R) Management Engine BIOS Extension v9.0.0.0029/Intel(R) ME v9.5.30.1808
Copyright(C) 2003-13 Intel Corporation. All Rights Reserved.
MAIN MENU
MEBx Login
> Intel (R) ME General Settings
> Intel (R) AMT Configuration
MEBx Exit
Intel (R) ME New Password
Intel(R) ME Password
[↑↓] = Move Highlight [Enter] = Select Entry [Esc]= Exit

4. You will be asked to verify the password. Enter the same new password in the space provided under Verify Password then press Enter.


Intel(R) Management Engine BIOS Extension v9.0.0.0029/Intel(R) ME v9.5.30.1808
Copyright(C) 2003-13 Intel Corporation. All Rights Reserved.
MAIN MENU
MEBx Login
> Intel (R) ME General Settings
> Intel (R) AMT Configuration
MEBx Exit
Verify Password
Intel(R) ME Password
[↑↓] = Move Highlight [Enter] = Select Entry [Esc]= Exit

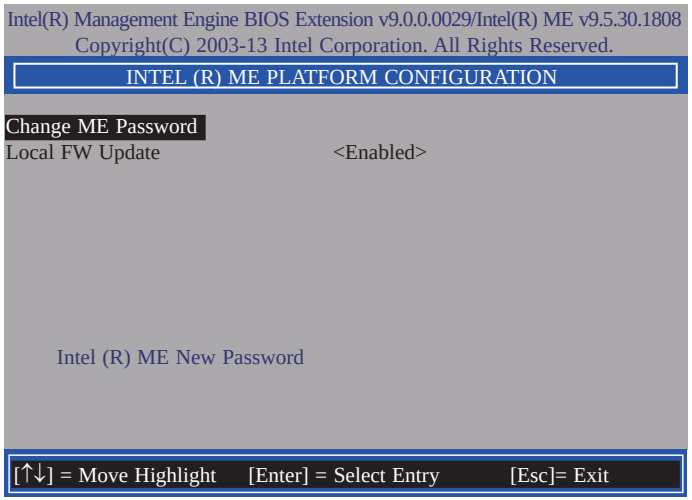
5. Select **Intel(R) ME General Settings** then press Enter.


Intel(R) Management Engine BIOS Extension v9.0.0.0029/Intel(R) ME v9.5.30.1808
Copyright(C) 2003-13 Intel Corporation. All Rights Reserved.
MAIN MENU
> Intel (R) ME General Settings
> Intel (R) AMT Configuration
MEBx Exit
[↑↓] = Move Highlight [Enter] = Select Entry [Esc]= Exit

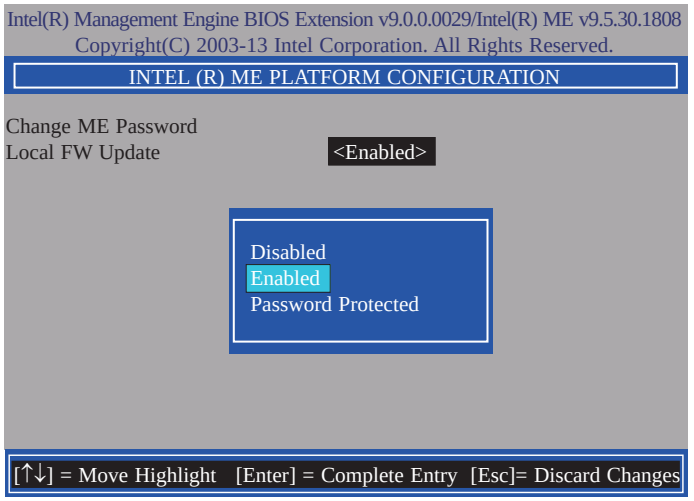
6. Select **Change Intel(R) ME Password** then press Enter.

   You will be prompted for a password. The default password is "**admin**". Enter the default password in the space provided under Intel(R) ME New Password then press Enter.

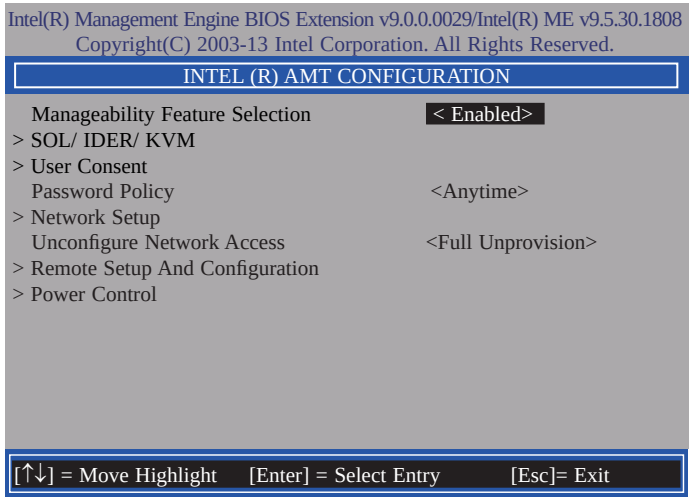
   - 8-32 characters
   - Strong 7-bit ASCII characters excluding **: ,** and **"** characters
   - At least one digit character (0, 1, ...9)
   - At least one 7-bit ASCII non alpha-numeric character, above 0x20, (e.g. !, $, ;)
   - Both lower case and upper case characters


Intel(R) Management Engine BIOS Extension v9.0.0.0029/Intel(R) ME v9.5.30.1808
Copyright(C) 2003-13 Intel Corporation. All Rights Reserved.
INTEL (R) ME PLATFORM CONFIGURATION
Change ME Password
Local FW Update <Enabled>
Intel (R) ME New Password
[↑↓] = Move Highlight [Enter] = Select Entry [Esc]= Exit

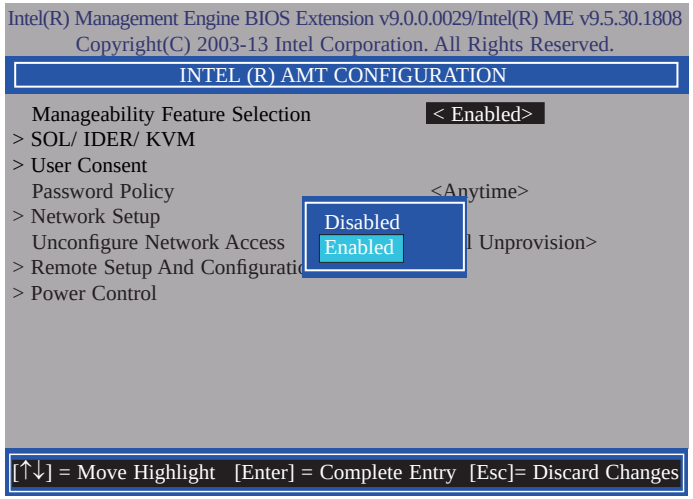
7. Select **Local FW Update** then press Enter. Select **Enabled** then press Enter.


Intel(R) Management Engine BIOS Extension v9.0.0.0029/Intel(R) ME v9.5.30.1808
Copyright(C) 2003-13 Intel Corporation. All Rights Reserved.
INTEL (R) ME PLATFORM CONFIGURATION
Change ME Password
Local FW Update <Enabled>
Disabled
Enabled
Password Protected
[↑↓] = Move Highlight [Enter] = Complete Entry [Esc]= Discard Changes

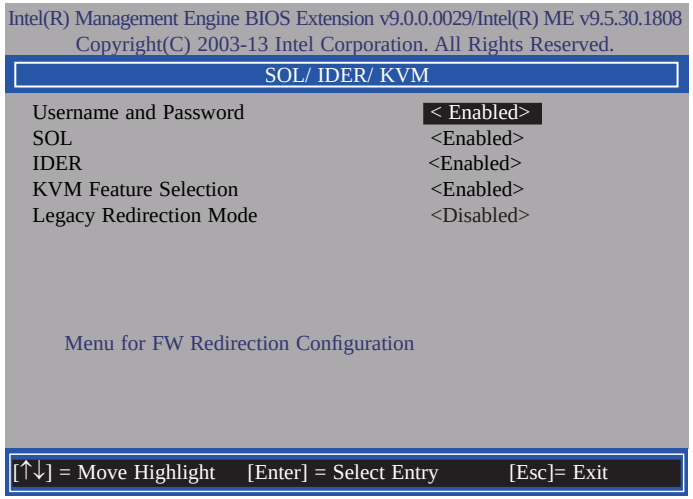
8. Select Previous Menu until you return to the **Main Menu**. Select **Intel(R) AMT Configuration** then press Enter.


Intel(R) Management Engine BIOS Extension v9.0.0.0029/Intel(R) ME v9.5.30.1808
Copyright(C) 2003-13 Intel Corporation. All Rights Reserved.
INTEL (R) AMT CONFIGURATION
Manageability Feature Selection < Enabled>
> SOL/ IDER/ KVM
> User Consent
Password Policy <Anytime>
> Network Setup
Unconfigure Network Access <Full Unprovision>
> Remote Setup And Configuration
> Power Control
[↑↓] = Move Highlight [Enter] = Select Entry [Esc]= Exit

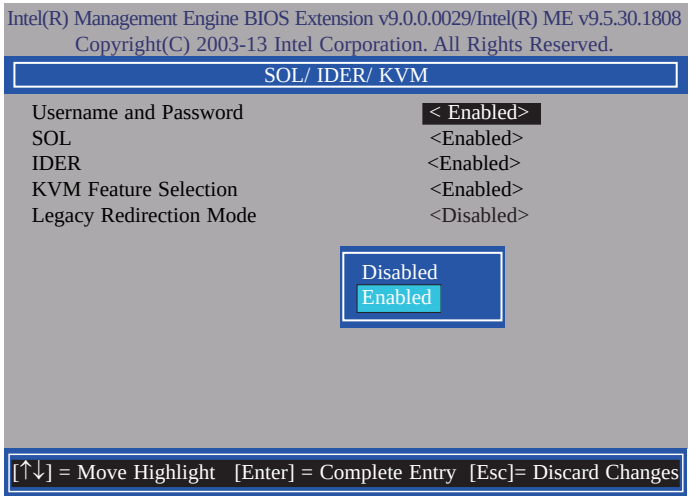
9. In the **Intel(R) AMT Configuration** menu, select **Manageability Feature Selection** then press Enter. Select **Disabled** then press Enter.


Intel(R) Management Engine BIOS Extension v9.0.0.0029/Intel(R) ME v9.5.30.1808
Copyright(C) 2003-13 Intel Corporation. All Rights Reserved.
INTEL (R) AMT CONFIGURATION
Manageability Feature Selection < Enabled>
> SOL/ IDER/ KVM
> User Consent
Password Policy <Anytime>
> Network Setup
Unconfigure Network Access l Unprovision>
> Remote Setup And Configuratio
> Power Control
Disabled
Enabled
[↑↓] = Move Highlight [Enter] = Complete Entry [Esc]= Discard Changes

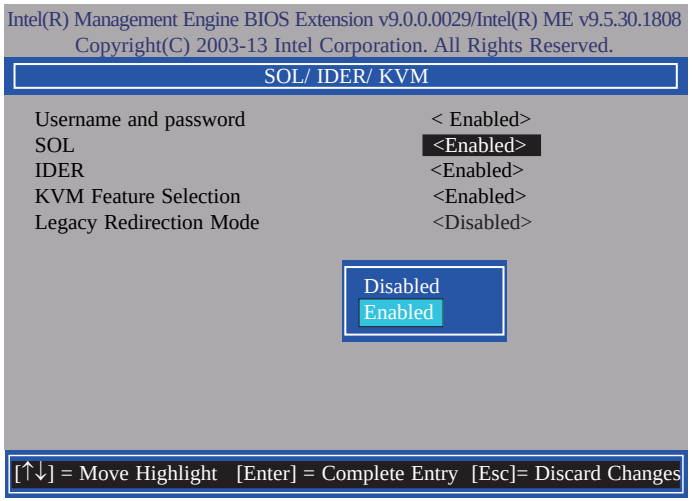
10. In the **Intel(R) AMT Configuration** menu, select **SOL/IDER/KVM** then press Enter.


Intel(R) Management Engine BIOS Extension v9.0.0.0029/Intel(R) ME v9.5.30.1808
Copyright(C) 2003-13 Intel Corporation. All Rights Reserved.
SOL/ IDER/ KVM
Username and Password < Enabled>
SOL <Enabled>
IDER <Enabled>
KVM Feature Selection <Enabled>
Legacy Redirection Mode <Disabled>
Menu for FW Redirection Configuration
[↑↓] = Move Highlight [Enter] = Select Entry [Esc]= Exit

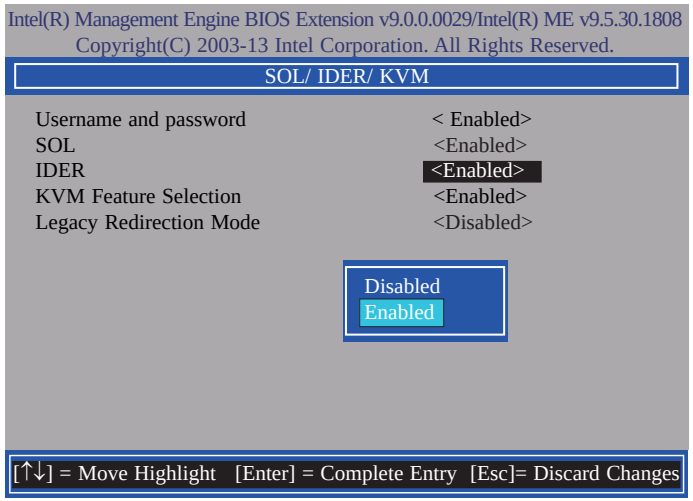
11. In the **SOL/IDER/KVM** menu, select **Username and Password** then press Enter. Select **Disabled** then press Enter.



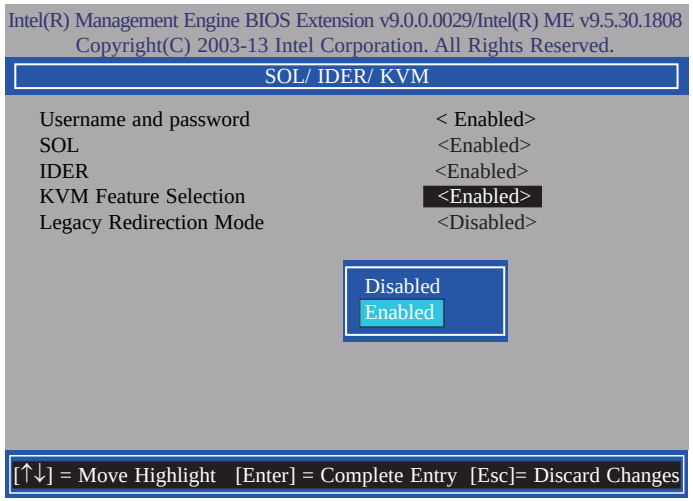
12. In the **SOL/IDER/KVM** menu, select **SOL** then press Enter. Select **Disabled** then press Enter.



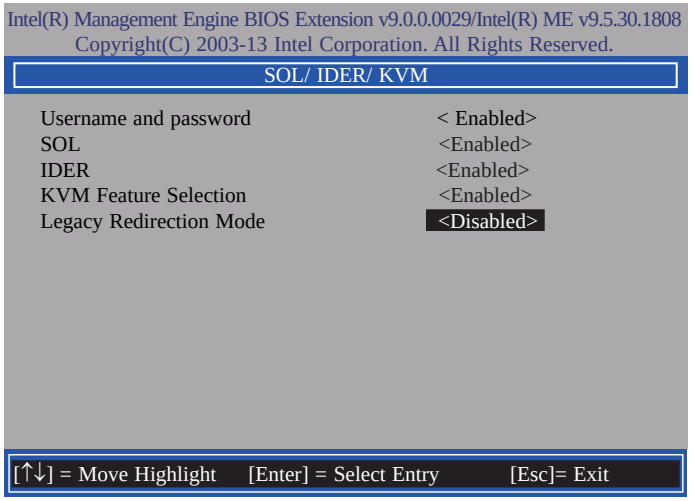
13. In the **SOL/IDER/KVM** menu, select **IDER** then press Enter. Select **Disabled** then press Enter.



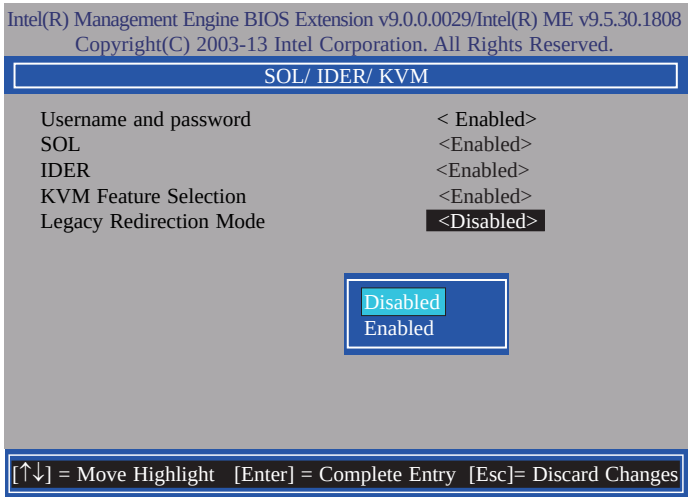
14. In the **SOL/IDER/KVM** menu, select **KVM Feature Selection** then press Enter. Select **Disabled** then press Enter.



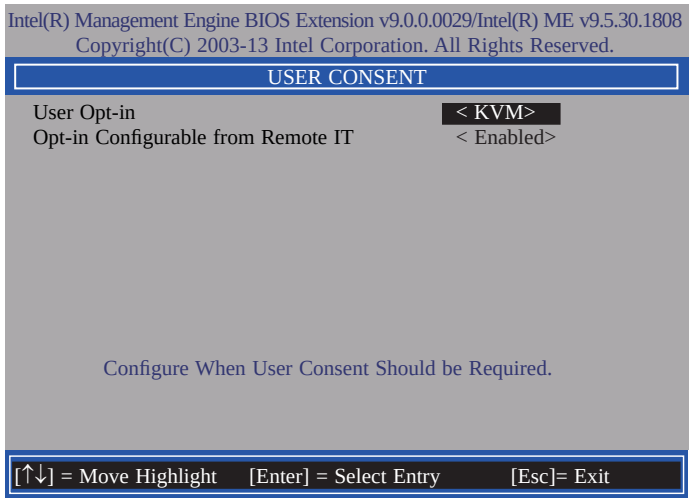
15. In the **SOL/IDER/KVM** menu, select **Legacy Redirection Mode** then press Enter.



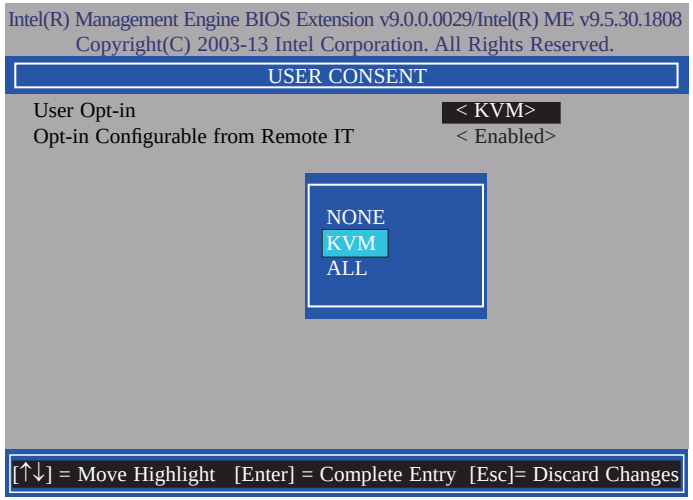
16. Select **Enabled** then press Enter.



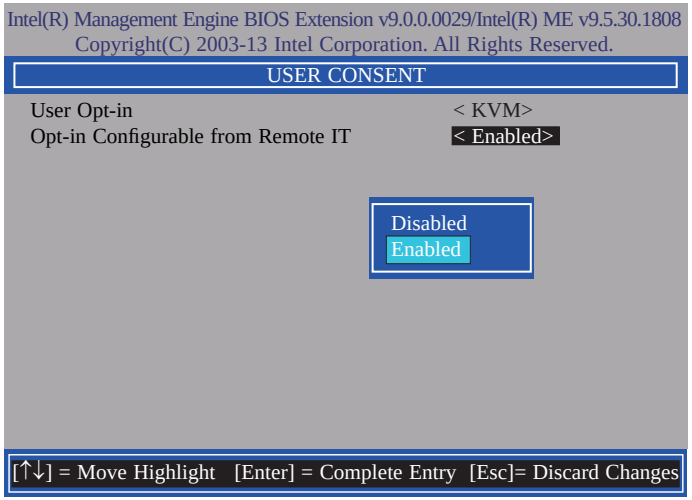
17. Select Previous Menu until you return to the **Intel(R) AMT Configuration** menu. Select **User Consent** then press Enter.


Intel(R) Management Engine BIOS Extension v9.0.0.0029/Intel(R) ME v9.5.30.1808
Copyright(C) 2003-13 Intel Corporation. All Rights Reserved.
USER CONSENT
User Opt-in
< KVM>
Opt-in Configurable from Remote IT
< Enabled>
Configure When User Consent Should be Required.
[↑↓] = Move Highlight
[Enter] = Select Entry
[Esc]= Exit

18. In the **User Consent** menu**,** select **User Opt-in** then press Enter. Select **None** then press Enter.

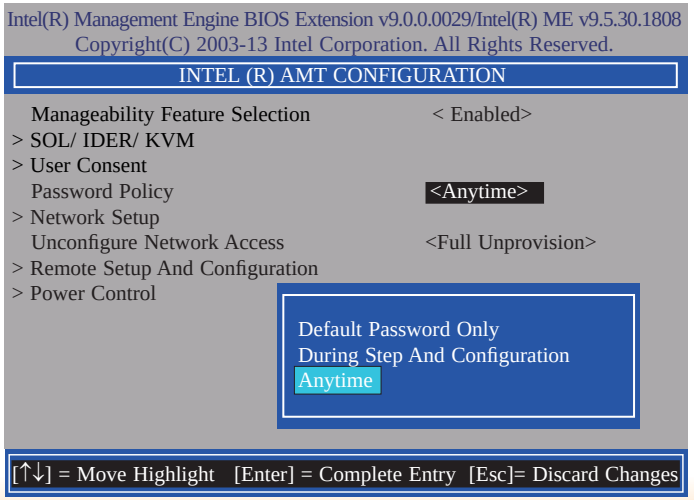


19. In the **User Consent** menu**,** select **Opt-in Configurable from Remote IT** then press Enter. Select **Disable Remote Control of KVM Opt-in Policy** then press Enter.

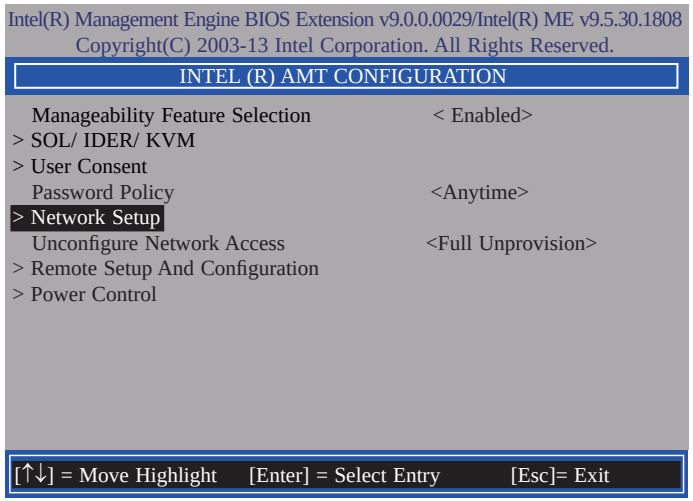


20. Select Previous Menu until you return to the **Intel(R) AMT Configuration** menu. Select **Password Policy** then press Enter.

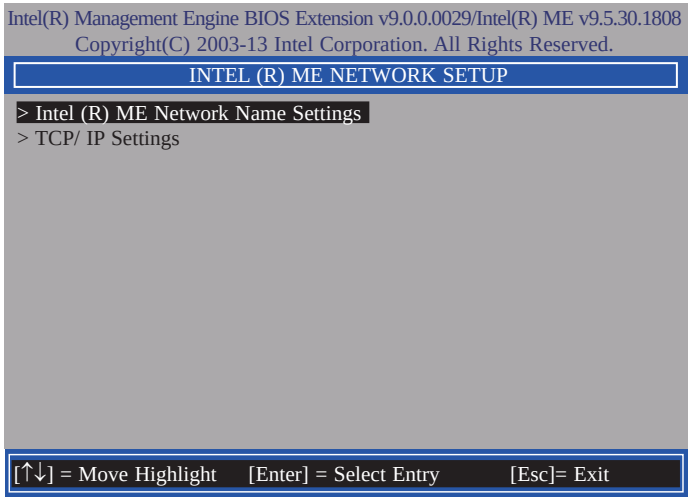
You may choose to use a password only during setup and configuration or to use a password anytime the system is being accessed.



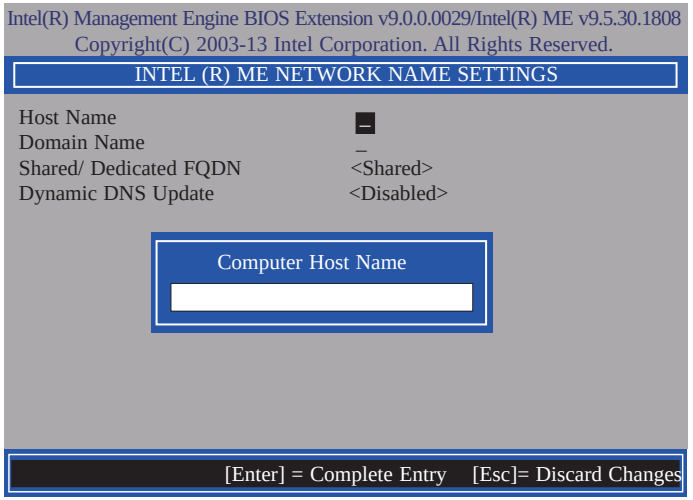
21. In the **Intel(R) AMT Configuration** menu**,** select **Network Setup** then press Enter.


Intel(R) Management Engine BIOS Extension v9.0.0.0029/Intel(R) ME v9.5.30.1808
Copyright(C) 2003-13 Intel Corporation. All Rights Reserved.
INTEL (R) AMT CONFIGURATION
Manageability Feature Selection < Enabled>
> SOL/ IDER/ KVM
> User Consent
Password Policy <Anytime>
> Network Setup
Unconfigure Network Access <Full Unprovision>
> Remote Setup And Configuration
> Power Control
[↑↓] = Move Highlight [Enter] = Select Entry [Esc]= Exit

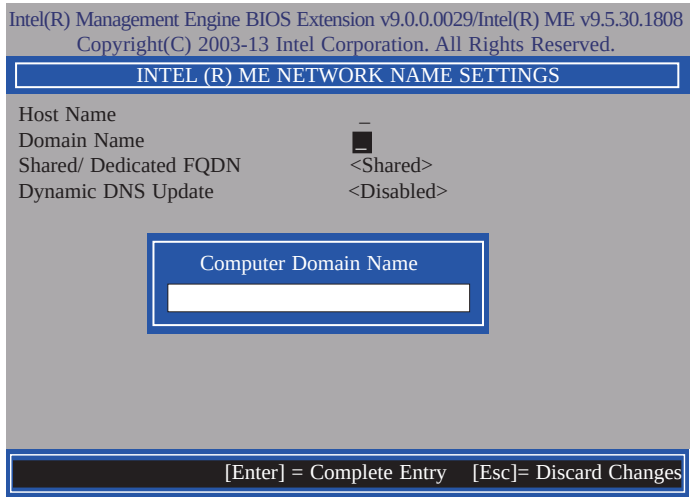
22. In the **Intel(R) ME Network Setup** menu, select **Intel(R) ME Network Name Settings** then press Enter.


Intel(R) Management Engine BIOS Extension v9.0.0.0029/Intel(R) ME v9.5.30.1808
Copyright(C) 2003-13 Intel Corporation. All Rights Reserved.
INTEL (R) ME NETWORK SETUP
> Intel (R) ME Network Name Settings
> TCP/ IP Settings
[↑↓] = Move Highlight [Enter] = Select Entry [Esc]= Exit

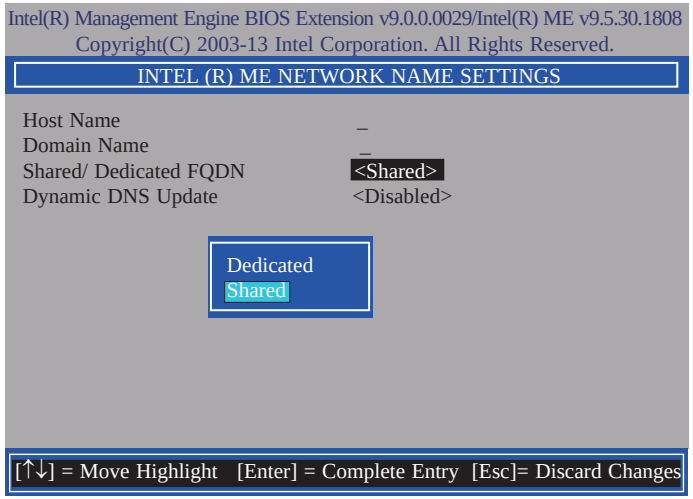
23. In the **Intel(R) ME Network Name Settings** menu, select **Host Name** then press Enter. Enter the computer's host name then press Enter.


Intel(R) Management Engine BIOS Extension v9.0.0.0029/Intel(R) ME v9.5.30.1808
Copyright(C) 2003-13 Intel Corporation. All Rights Reserved.
INTEL (R) ME NETWORK NAME SETTINGS
Host Name
Domain Name
Shared/ Dedicated FQDN <Shared>
Dynamic DNS Update <Disabled>
Computer Host Name
[Enter] = Complete Entry [Esc]= Discard Changes

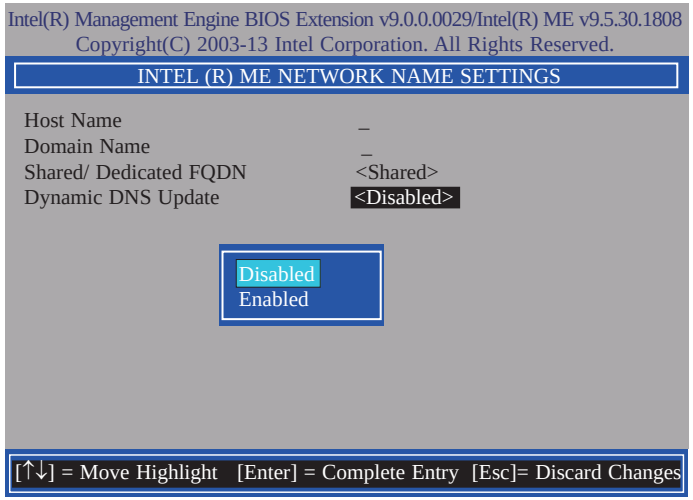
24. Select **Domain Name** then press Enter. Enter the computer's domain name then press Enter.


Intel(R) Management Engine BIOS Extension v9.0.0.0029/Intel(R) ME v9.5.30.1808
Copyright(C) 2003-13 Intel Corporation. All Rights Reserved.
INTEL (R) ME NETWORK NAME SETTINGS
Host Name
Domain Name
Shared/ Dedicated FQDN <Shared>
Dynamic DNS Update <Disabled>
Computer Domain Name
[Enter] = Complete Entry [Esc]= Discard Changes

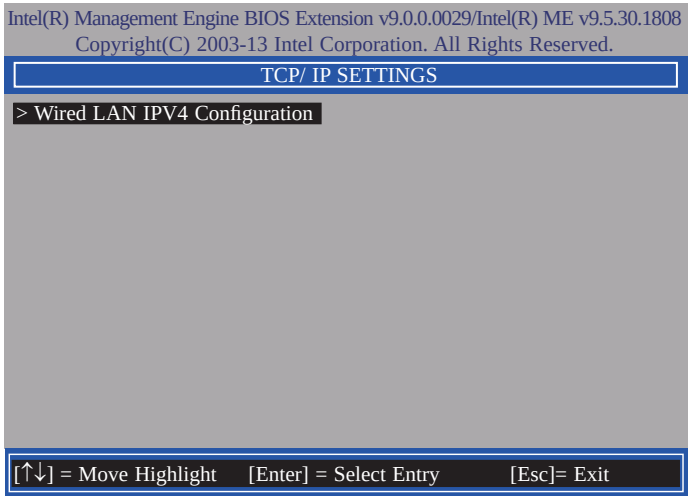
25. Select **Shared/Dedicated FQDN** then press Enter. Select **Shared** or **Dedicated** then press Enter.


Intel(R) Management Engine BIOS Extension v9.0.0.0029/Intel(R) ME v9.5.30.1808
Copyright(C) 2003-13 Intel Corporation. All Rights Reserved.
INTEL (R) ME NETWORK NAME SETTINGS
Host Name
Domain Name
Shared/ Dedicated FQDN <Shared>
Dynamic DNS Update <Disabled>
Dedicated
Shared
[↑↓] = Move Highlight [Enter] = Complete Entry [Esc]= Discard Changes

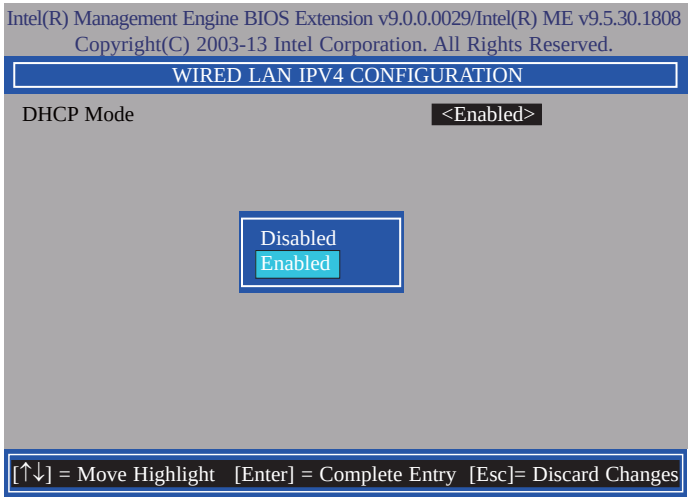
26. Select **Dynamic DNS Update** then press Enter. Select **Enabled** or **Disabled** then press Enter.


Intel(R) Management Engine BIOS Extension v9.0.0.0029/Intel(R) ME v9.5.30.1808
Copyright(C) 2003-13 Intel Corporation. All Rights Reserved.
INTEL (R) ME NETWORK NAME SETTINGS
Host Name
Domain Name
Shared/ Dedicated FQDN <Shared>
Dynamic DNS Update <Disabled>
Disabled
Enabled
[↑↓] = Move Highlight [Enter] = Complete Entry [Esc]= Discard Changes

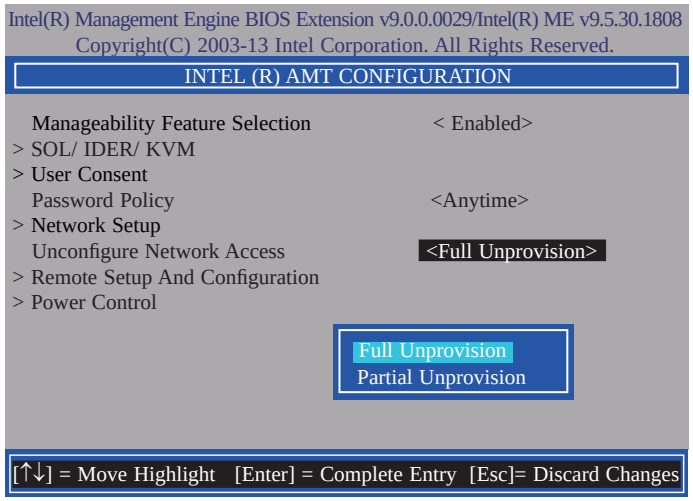
27. Select Previous Menu until you return to the **Intel(R) ME Network Setup** menu. Select **TCP/IP Settings** then press Enter.


Intel(R) Management Engine BIOS Extension v9.0.0.0029/Intel(R) ME v9.5.30.1808
Copyright(C) 2003-13 Intel Corporation. All Rights Reserved.
TCP/ IP SETTINGS
> Wired LAN IPV4 Configuration
[↑↓] = Move Highlight [Enter] = Select Entry [Esc]= Exit

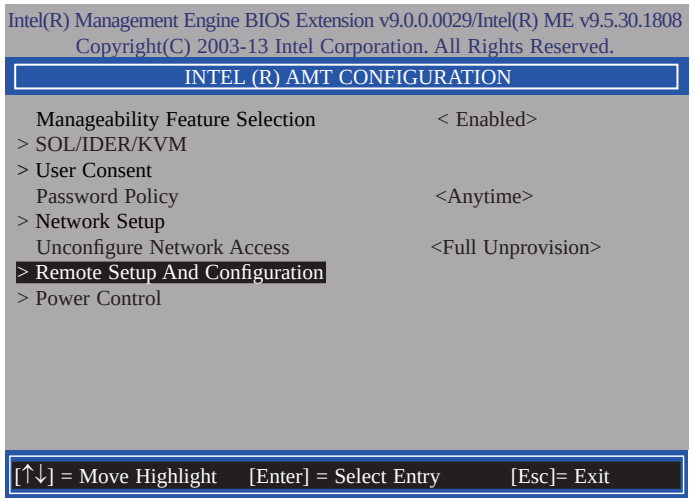
28. In the **TCP/IP Settings** menu, select **Wired LAN IPV4 Configuration** then press Enter.


Intel(R) Management Engine BIOS Extension v9.0.0.0029/Intel(R) ME v9.5.30.1808
Copyright(C) 2003-13 Intel Corporation. All Rights Reserved.
WIRED LAN IPV4 CONFIGURATION
DHCP Mode <Enabled>
Disabled
Enabled
[↑↓] = Move Highlight [Enter] = Complete Entry [Esc]= Discard Changes

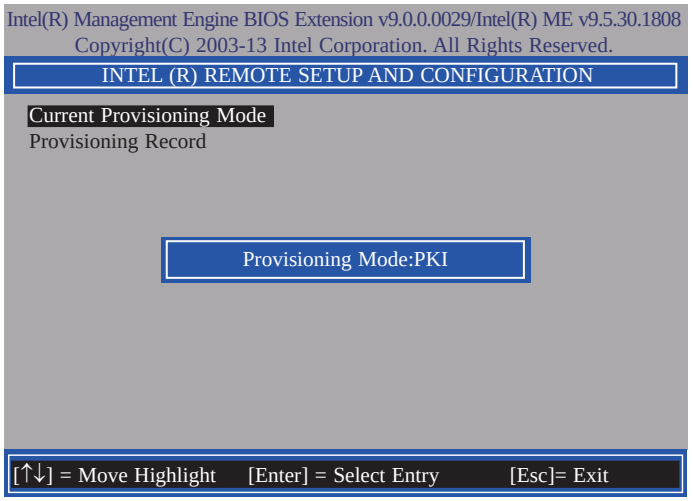
29. In the **Intel(R) AMT Configuration** menu, select **Unconfigure Network Access** then press Enter.


Intel(R) Management Engine BIOS Extension v9.0.0.0029/Intel(R) ME v9.5.30.1808
Copyright(C) 2003-13 Intel Corporation. All Rights Reserved.
INTEL (R) AMT CONFIGURATION
Manageability Feature Selection < Enabled>
> SOL/ IDER/ KVM
> User Consent
Password Policy <Anytime>
> Network Setup
Unconfigure Network Access <Full Unprovision>
> Remote Setup And Configuration
> Power Control
Full Unprovision
Partial Unprovision
[↑↓] = Move Highlight [Enter] = Complete Entry [Esc]= Discard Changes

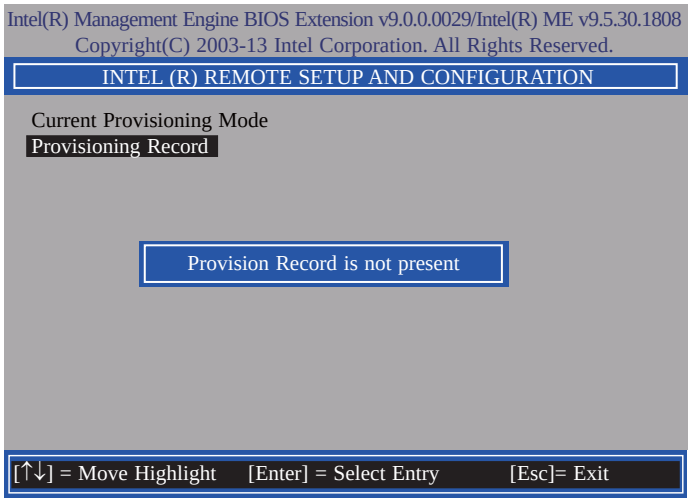
30. In the **Intel(R) AMT Configuration** menu, select **Remote Setup And Configuration** then press Enter.


Intel(R) Management Engine BIOS Extension v9.0.0.0029/Intel(R) ME v9.5.30.1808
Copyright(C) 2003-13 Intel Corporation. All Rights Reserved.
INTEL (R) AMT CONFIGURATION
Manageability Feature Selection < Enabled>
> SOL/IDER/KVM
> User Consent
Password Policy <Anytime>
> Network Setup
Unconfigure Network Access <Full Unprovision>
> Remote Setup And Configuration
> Power Control
[↑↓] = Move Highlight [Enter] = Select Entry [Esc]= Exit

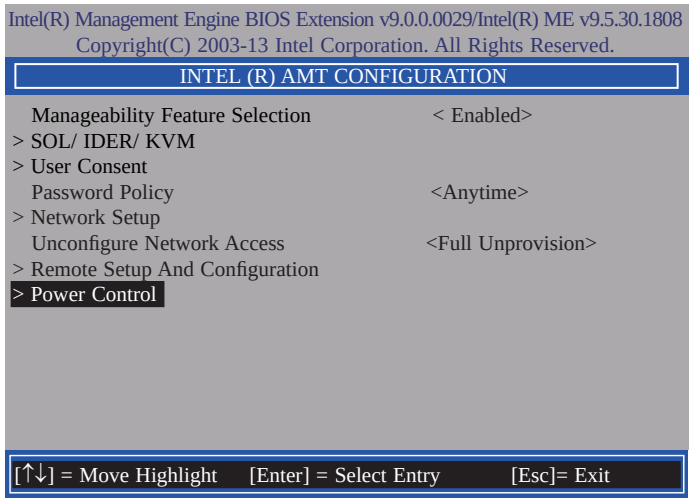
31. In the **Intel(R) Remote Setup And Configuration** menu**,** select **Current Provisioing Mode** then press Enter.


Intel(R) Management Engine BIOS Extension v9.0.0.0029/Intel(R) ME v9.5.30.1808
Copyright(C) 2003-13 Intel Corporation. All Rights Reserved.
INTEL (R) REMOTE SETUP AND CONFIGURATION
Current Provisioning Mode
Provisioning Record
Provisioning Mode:PKI
[↑↓] = Move Highlight [Enter] = Select Entry [Esc]= Exit

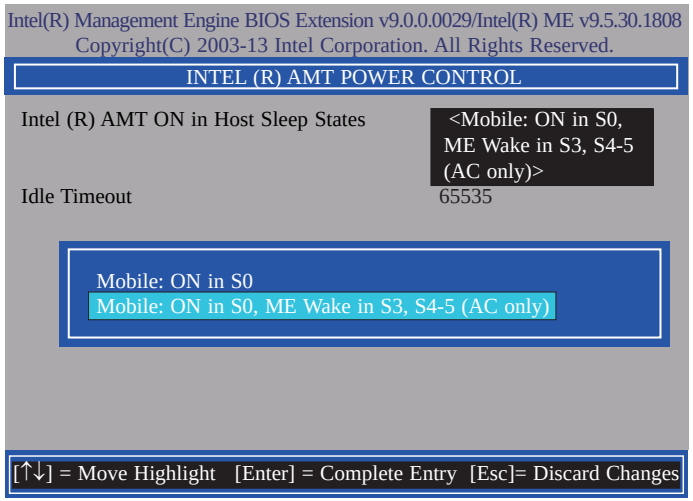
32. In the **Intel(R) Remote Setup And Configuration** menu**,** select **Provisioning Record** then press Enter.


Intel(R) Management Engine BIOS Extension v9.0.0.0029/Intel(R) ME v9.5.30.1808
Copyright(C) 2003-13 Intel Corporation. All Rights Reserved.
INTEL (R) REMOTE SETUP AND CONFIGURATION
Current Provisioning Mode
Provisioning Record
Provision Record is not present
[↑↓] = Move Highlight [Enter] = Select Entry [Esc]= Exit

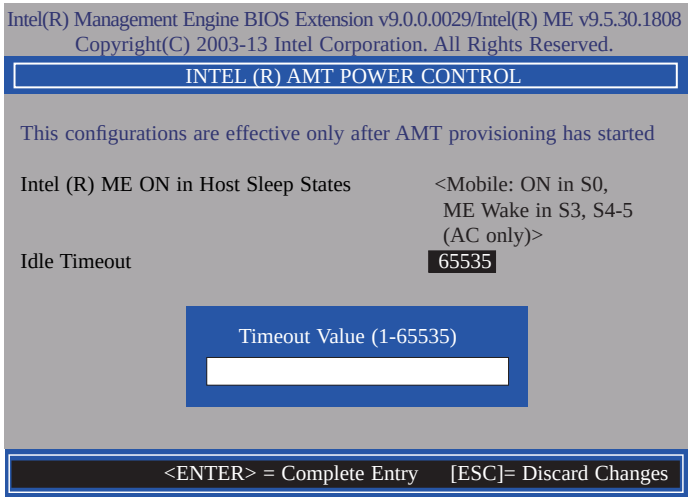
33. In the **Intel(R) AMT Configuration** menu, select **Power Control** then press Enter.


Intel(R) Management Engine BIOS Extension v9.0.0.0029/Intel(R) ME v9.5.30.1808
Copyright(C) 2003-13 Intel Corporation. All Rights Reserved.
INTEL (R) AMT CONFIGURATION
Manageability Feature Selection < Enabled>
> SOL/ IDER/ KVM
> User Consent
Password Policy <Anytime>
> Network Setup
Unconfigure Network Access <Full Unprovision>
> Remote Setup And Configuration
> Power Control
[↑↓] = Move Highlight [Enter] = Select Entry [Esc]= Exit

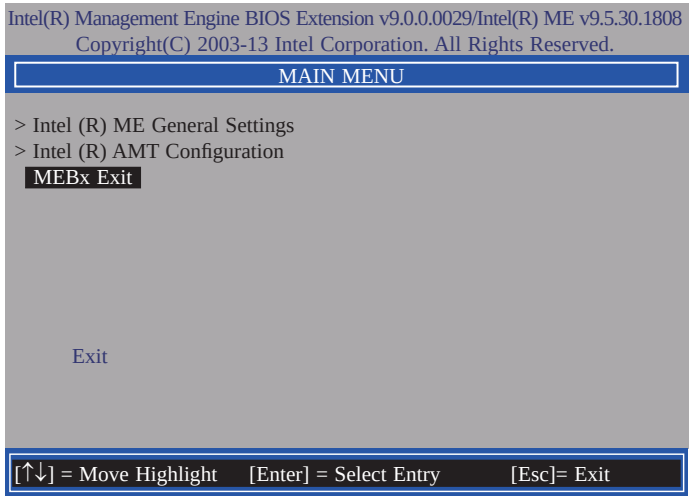
34. In the **Intel(R) AMT Power Control** menu, select **Intel(R) AMT ON in Host Sleep States** then press Enter. Select an option then press Enter.


Intel(R) Management Engine BIOS Extension v9.0.0.0029/Intel(R) ME v9.5.30.1808
Copyright(C) 2003-13 Intel Corporation. All Rights Reserved.
INTEL (R) AMT POWER CONTROL
Intel (R) AMT ON in Host Sleep States <Mobile: ON in S0, ME Wake in S3, S4-5 (AC only)>
Idle Timeout 65535
Mobile: ON in S0
Mobile: ON in S0, ME Wake in S3, S4-5 (AC only)
[↑↓] = Move Highlight [Enter] = Complete Entry [Esc]= Discard Changes

35. In the **Intel(R) AMT Power Control** menu, select **Idle Timeout** then press Enter. Enter the timeout value (1-65535).


Intel(R) Management Engine BIOS Extension v9.0.0.0029/Intel(R) ME v9.5.30.1808
Copyright(C) 2003-13 Intel Corporation. All Rights Reserved.
INTEL (R) AMT POWER CONTROL
This configurations are effective only after AMT provisioning has started
Intel (R) ME ON in Host Sleep States <Mobile: ON in S0, ME Wake in S3, S4-5 (AC only)>
Idle Timeout 65535
Timeout Value (1-65535)
<ENTER> = Complete Entry [ESC]= Discard Changes

36. Select Previous Menu until you return to the **Main Menu**. Select **Exit** then press Enter. Type **Y** then press Enter.


Intel(R) Management Engine BIOS Extension v9.0.0.0029/Intel(R) ME v9.5.30.1808
Copyright(C) 2003-13 Intel Corporation. All Rights Reserved.
MAIN MENU
> Intel (R) ME General Settings
> Intel (R) AMT Configuration
MEBx Exit
Exit
[↑↓] = Move Highlight [Enter] = Select Entry [Esc]= Exit

Appendix A - NLITE and AHCI Installation Guide

nLite

nLite is an application program that allows you to customize your XP installation disc by integrating the RAID/AHCI drivers into the disc. By using nLite, the F6 function key usually required during installation is no longer needed.

Note:
The installation steps below are based on nLite version 1.4.9. Installation procedures may slightly vary if you're using another version of the program.

1. Download the program from nLite's offical website.

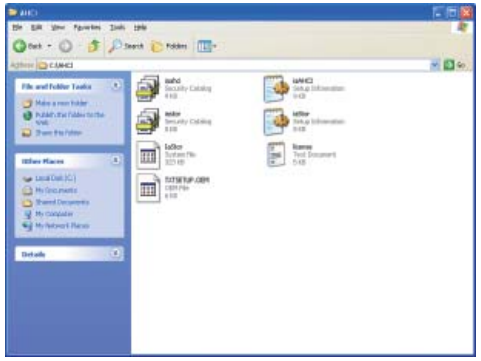
   http://www.nliteos.com/download.html

2. Install nLite.

Important:
Due to it's coding with Visual.Net, you may need to first install .NET Framework prior to installing nLite.

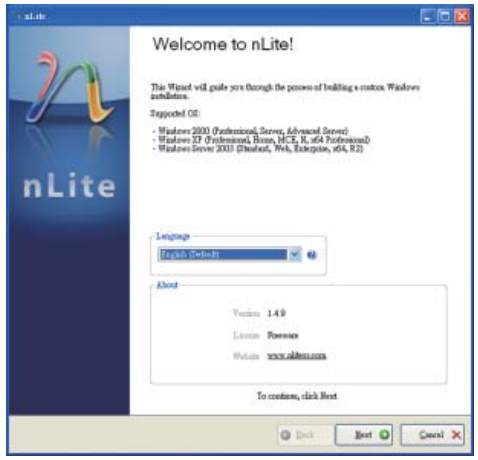
3. Download relevant RAID/AHCI driver files from Intel's website. The drivers you choose will depend on the operating system and chipset used by your computer.

   The downloaded driver files should include iaahci.cat, iaAHCI.inf, iastor.cat, iaStor.inf, IaStor.sys, license.txt and TXTSETUP.OEM.



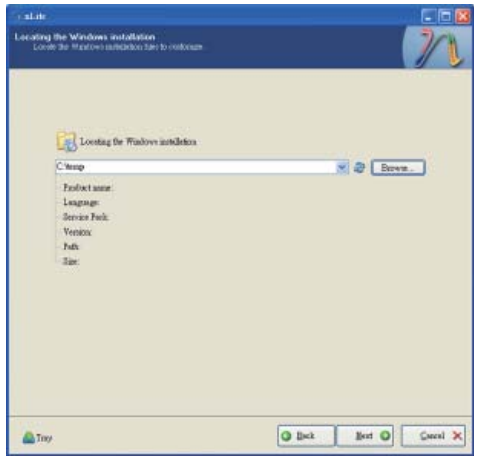
4. Insert the XP installation disc into an optical drive.

5. Launch nLite. The Welcome screen will appear. Click **Next**.

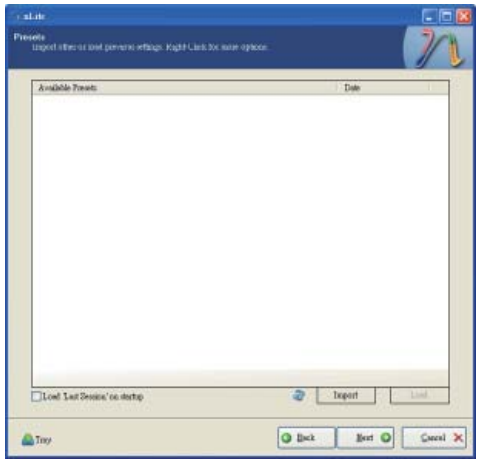


6. Click **Next** to temporarily save the Windows installation files to the designated default folder.

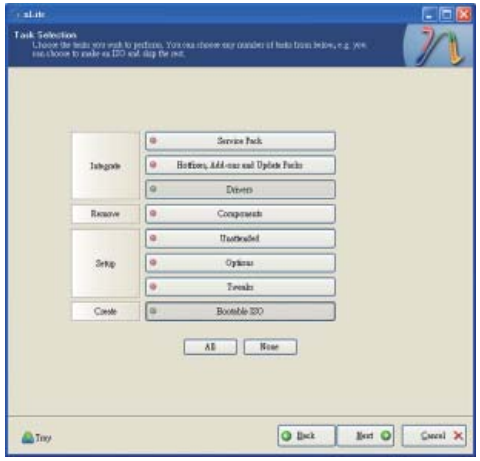
   If you want to save them in another folder, click **Browse**, select the folder and then click **Next**.



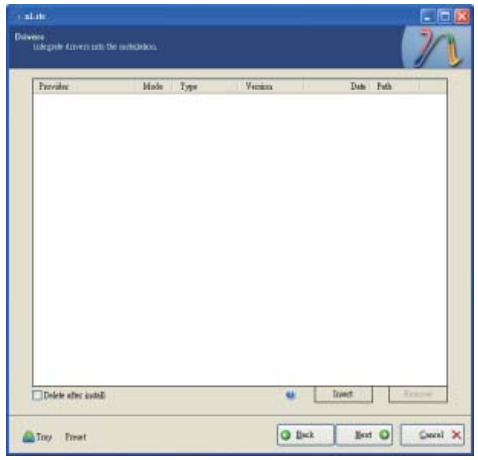
7. Click **Next**.



8. In the Task Selection dialog box, click **Drivers** and **Bootable ISO**. Click **Next**.

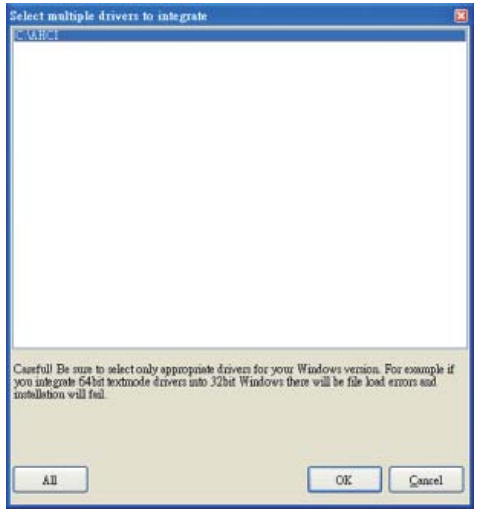


9. Click **Insert** and then select **Multiple driver folder** to select the drivers you will integrate. Click **Next**.



10. Select only the drivers appropriate for the Windows version that you are using and then click **OK**.

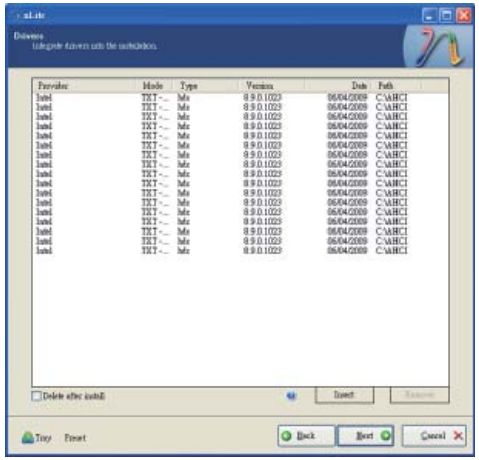
    Integrating 64-bit drivers into 32-bit Windows or vice versa will cause file load errors and failed installation.


Select multiple drivers to integrate
Careful! Be sure to select only appropriate drivers for your Windows version. For example if you integrate 64bit textmode drivers into 32bit Windows there will be file load errors and installation will fail.
All
OK
Cancel

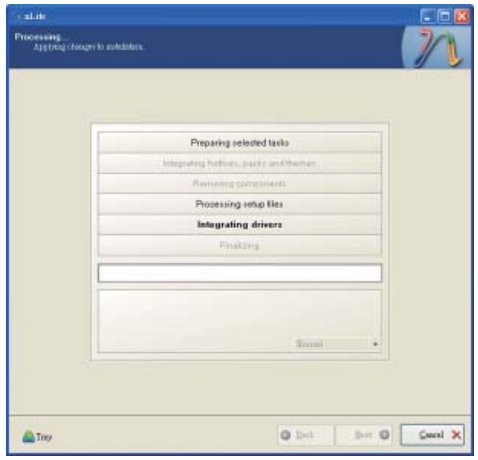
11. If you are uncertain of the southbridge chip used on your motherboard, select all RAID/AHCI controllers and then click **OK**.

Driver Integration Options
Storage Device Textmode Driver
Choose the exact type of hardware and OS if listed.
Driver folder
C:\AHCI
Mode
Regular PNP driver
Textmode driver
Textmode integration options
Hold CTRL to select multiple items. Be careful if your controller even needs more than one. Don't select different OS versions.
Help
OK
Cancel

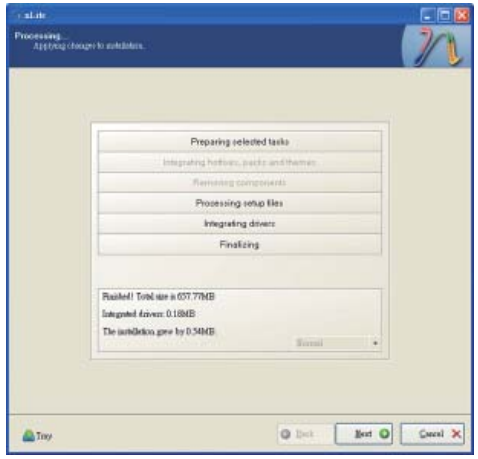
12. Click **Next**.



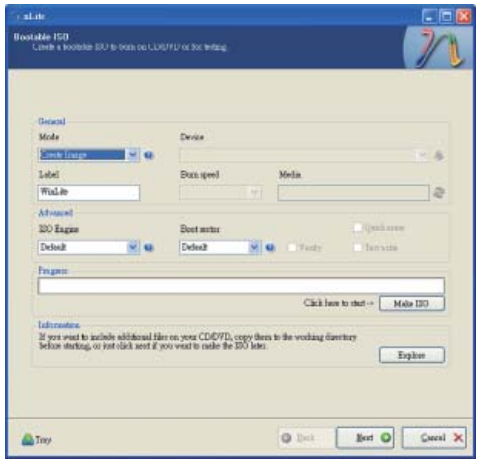
13. The program is currently integrating the drivers and applying changes to the installation.



14. When the program is finished applying the changes, click **Next**.

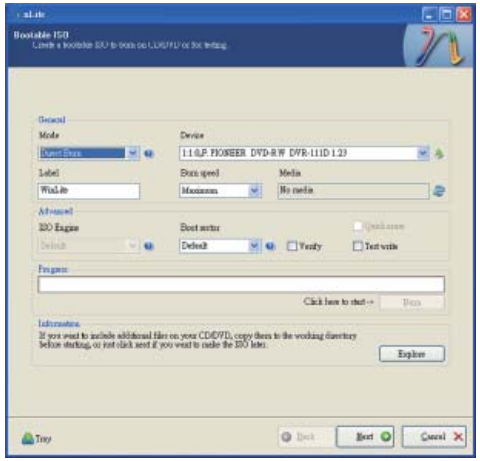


15. To create an image, select the **Create Image** mode under the General section and then click **Next**.



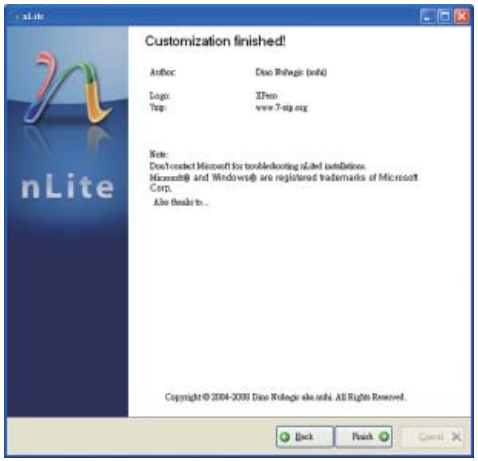
16. Or you can choose to burn it directly to a disc by selecting the **Direct Burn** mode under the General section.

    Select the optical device and all other necessary settings and then click **Next**.



17. You have finished customizing the Windows XP installation disc. Click **Finish**.

    Enter the BIOS utility to configure the SATA controller to RAID/AHCI. You can now install Windows XP.

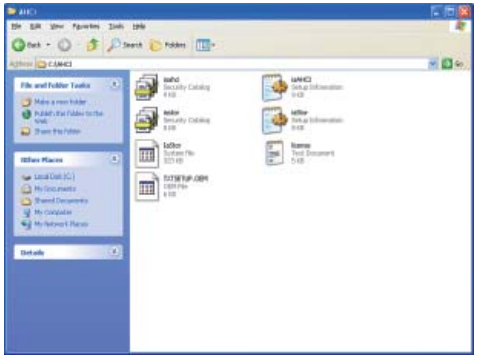


AHCI

The installation steps below will guide you in configuring your SATA drive to AHCI mode.

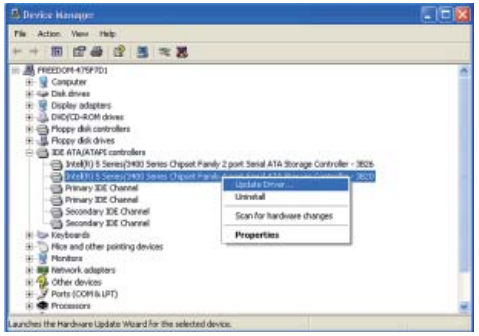
1. Enter the BIOS utility and configure the SATA controller to IDE mode.
2. Install Windows XP but do not press F6.
3. Download relevant RAID/AHCI driver files supported by the motherboard chipset from Intel's website.

   Transfer the downloaded driver files to C:\AHCI.



4. Open Device Manager and right click on one of the Intel Serial ATA Storage Controllers, then select **Update Driver**.

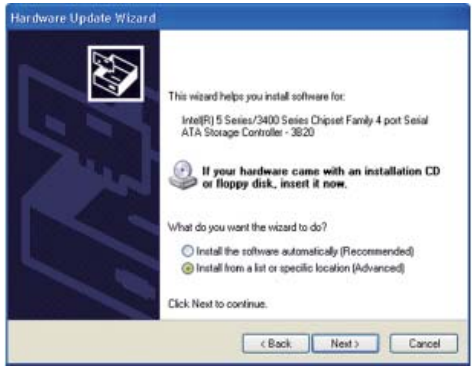
   If the controller you selected did not work, try selecting another one.



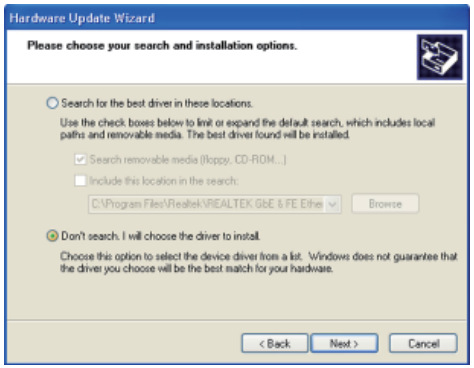
5. In the Hardware Update Wizard dialog box, select **"No, not this time"** then click **Next**.

Hardware Update Wizard
Welcome to the Hardware Update Wizard
Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).
Read our privacy policy
Can Windows connect to Windows Update to search for software?
Yes, this time only
Yes, now and every time I connect a device
No, not this time
Click Next to continue.
< Back
Next >
Cancel

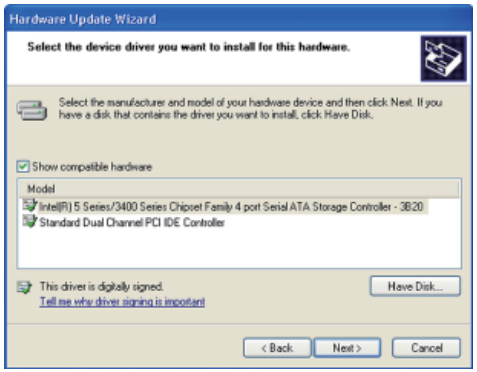
6. Select **"Install from a list or specific location (Advanced)"** and then click **Next**.


Hardware Update Wizard
This wizard helps you install software for:
Intel(R) 5 Series/3400 Series Chipset Family 4 port Serial ATA Storage Controller - 3820
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

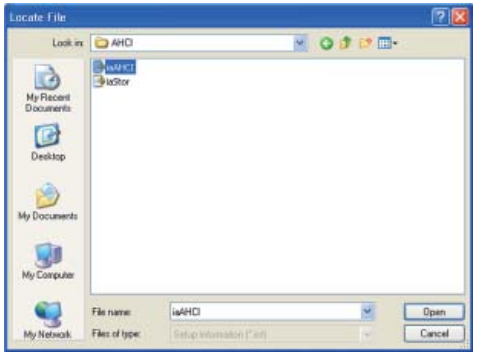
7. Select **"Don't search. I will choose the driver to install"** and then click **Next**.


Hardware Update Wizard
Please choose your search and installation options.
Search for the best driver in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM...)
Include this location in the search:
Browse
Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back
Next >
Cancel

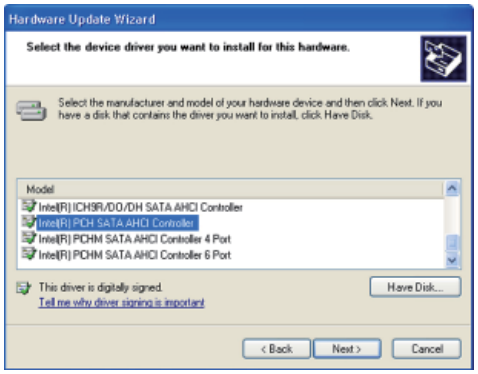
8. Click **“Have Disk”**.


Hardware Update Wizard
Select the device driver you want to install for this hardware.
Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.
Show compatible hardware
Model
Intel(R) 5 Series/3400 Series Chipset Family 4 port Serial ATA Storage Controller - 3B20
Standard Dual Channel PCI IDE Controller
This driver is digitally signed.
Tell me why driver signing is important
Have Disk...
< Back
Next >
Cancel

9. Select C:\AHCI\iaAHCI.inf and then click **Open**.

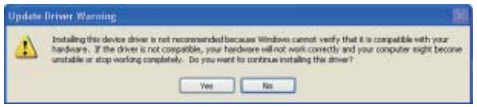


10. Select the appropriate AHCI Controller of your hardware device and then click **Next**.

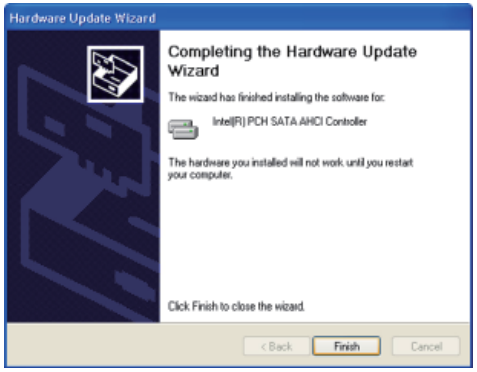

Hardware Update Wizard
Select the device driver you want to install for this hardware.
Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.
Model
Intel(R) ICH9R/DO/DH SATA AHCI Controller
Intel(R) PCH SATA AHCI Controller
Intel(R) PCHM SATA AHCI Controller 4 Port
Intel(R) PCHM SATA AHCI Controller 6 Port
This driver is digitally signed.
Tell me why driver signing is important
Have Disk...
< Back
Next >
Cancel

11. A warning message appeared because the selected SATA controller did not match your hardware device.

    Ignore the warning and click **Yes** to proceed.



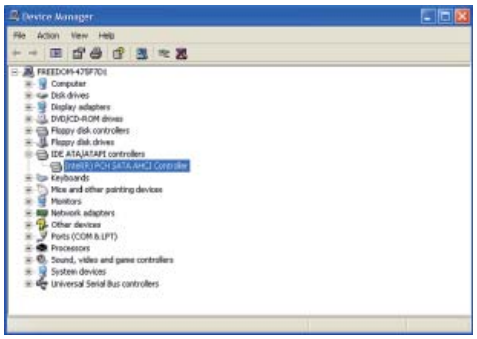
12. Click **Finish**.


Hardware Update Wizard
Completing the Hardware Update Wizard
The wizard has finished installing the software for:
Intel(R) PCH SATA AHCI Controller
The hardware you installed will not work until you restart your computer.
Click Finish to close the wizard.
< Back
Finish
Cancel

13. The system’s settings have been changed. Windows XP requires that you restart the computer. Click **Yes**.

System Settings Change
Your hardware settings have changed. You must restart your computer for these changes to take effect.
Do you want to restart your computer now?
Yes
No

14. Enter the BIOS utility and modify the SATA controller from IDE to AHCI. By doing so, Windows will work normally with the SATA controller that is in AHCI mode.



Appendix B - Watchdog Sample Code

```
;Software programming example:

;----------------------------------------------
;(1) Enter Super IO Configuration mode
;----------------------------------------------
MOV         DX,4EH
MOV         AL,87H
OUT         DX,AL
OUT         DX,AL

;--------------------------------------------------------------------------------
;(2) Configuration Logical Device 8, register CRF0/CRF1 (WDT Control/WDT
timer)
;--------------------------------------------------------------------------------
MOV         DX,4EH
MOV         AL,07H              ;Ready to Program Logical Device
OUT         DX,AL

MOV         DX,4FH
MOV         AL,08H              ;Select Logical Device 8
OUT         DX,AL

MOV         DX,4EH
MOV         AL, F1H             ;Select watchdog timer register
OUT         DX,AL

MOV         DX,4FH
MOV         AL,10H              ;Set watchdog timer value
OUT         DX,AL

MOV         DX,4EH
MOV         AL, F0H             ;Select watchdog Control Register
OUT         DX,AL

MOV         DX,4FH
MOV         AL,02H              ;Set Watchdog Control Value
OUT         DX,AL

;-----------------------------------------------------------------
;(1) Exit extended function mode
;-----------------------------------------------------------------
MOV          DX,4EH
MOV          AL,AAH
OUT           DX,AL
```

Appendix C - System Error Message

When the BIOS encounters an error that requires the user to correct something, either a beep code will sound or a message will be displayed in a box in the middle of the screen and the message, PRESS F1 TO CONTINUE, CTRL-ALT-ESC or DEL TO ENTER SETUP, will be shown in the information box at the bottom. Enter Setup to correct the error.

Error Messages

One or more of the following messages may be displayed if the BIOS detects an error during the POST. This list indicates the error messages for all Awards BIOSes:

CMOS BATTERY HAS FAILED

The CMOS battery is no longer functional. It should be replaced.

Important:
Danger of explosion if battery incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the battery manufacturer's instructions.

CMOS CHECKSUM ERROR

Checksum of CMOS is incorrect. This can indicate that CMOS has become corrupt. This error may have been caused by a weak battery. Check the battery and replace if necessary.

DISPLAY SWITCH IS SET INCORRECTLY

The display switch on the motherboard can be set to either monochrome or color. This indicates the switch is set to a different setting than indicated in Setup. Determine which setting is correct, either turn off the system and change the jumper or enter Setup and change the VIDEO selection.

FLOPPY DISK(S) fail (80)

Unable to reset floppy subsystem.

FLOPPY DISK(S) fail (40)

Floppy type mismatch.

Hard Disk(s) fail (80)

HDD reset failed.

Hard Disk(s) fail (40)

HDD controller diagnostics failed.

Hard Disk(s) fail (20)

HDD initialization error.

Hard Disk(s) fail (10)

Unable to recalibrate fixed disk.

Hard Disk(s) fail (08)

Sector Verify failed.

Keyboard is locked out - Unlock the key

The BIOS detects that the keyboard is locked. Keyboard controller is pulled low.

Keyboard error or no keyboard present

Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot.

Manufacturing POST loop

System will repeat POST procedure infinitely while the keyboard controller is pull low. This is also used for the M/B burn in test at the factory.

BIOS ROM checksum error - System halted

The checksum of ROM address F0000H-FFFFFH is bad.

Memory test fail

The BIOS reports memory test fail if the memory has error(s).

Appendix D - Troubleshooting Checklist

Troubleshooting Checklist

This chapter of the manual is designed to help you with problems that you may encounter with your personal computer. To efficiently troubleshoot your system, treat each problem individually. This is to ensure an accurate diagnosis of the problem in case a problem has multiple causes.

Some of the most common things to check when you encounter problems while using your system are listed below.

1. The power switch of each peripheral device is turned on.
2. All cables and power cords are tightly connected.
3. The electrical outlet to which your peripheral devices are connected is working. Test the outlet by plugging in a lamp or other electrical device.
4. The monitor is turned on.
5. The display's brightness and contrast controls are adjusted properly.
6. All add-in boards in the expansion slots are seated securely.
7. Any add-in board you have installed is designed for your system and is set up correctly.

Monitor/Display

If the display screen remains dark after the system is turned on:

1. Make sure that the monitor's power switch is on.
2. Check that one end of the monitor's power cord is properly attached to the monitor and the other end is plugged into a working AC outlet. If necessary, try another outlet.
3. Check that the video input cable is properly attached to the monitor and the system's display adapter.
4. Adjust the brightness of the display by turning the monitor's brightness control knob.

The picture seems to be constantly moving.

1. The monitor has lost its vertical sync. Adjust the monitor's vertical sync.
2. Move away any objects, such as another monitor or fan, that may be creating a magnetic field around the display.
3. Make sure your video card's output frequencies are supported by this monitor.

The screen seems to be constantly wavering.

1. If the monitor is close to another monitor, the adjacent monitor may need to be turned off. Fluorescent lights adjacent to the monitor may also cause screen wavering.

Power Supply

When the computer is turned on, nothing happens.

1. Check that one end of the AC power cord is plugged into a live outlet and the other end properly plugged into the back of the system.
2. Make sure that the voltage selection switch on the back panel is set for the correct type of voltage you are using.
3. The power cord may have a "short" or "open". Inspect the cord and install a new one if necessary.

Floppy Drive

The computer cannot access the floppy drive.

1. The floppy diskette may not be formatted. Format the diskette and try again.
2. The diskette may be write-protected. Use a diskette that is not write-protected.
3. You may be writing to the wrong drive. Check the path statement to make sure you are writing to the targeted drive.
4. There is not enough space left on the diskette. Use another diskette with adequate storage space.

Hard Drive

Hard disk failure.

1. Make sure the correct drive type for the hard disk drive has been entered in the BIOS.
2. If the system is configured with two hard drives, make sure the bootable (first) hard drive is configured as Master and the second hard drive is configured as Slave. The master hard drive must have an active/bootable partition.

Excessively long formatting period.

If your hard drive takes an excessively long period of time to format, it is likely a cable connection problem. However, if your hard drive has a large capacity, it will take a longer time to format.

Serial Port

The serial device (modem, printer) doesn't output anything or is outputting garbled characters.

1. Make sure that the serial device's power is turned on and that the device is on-line.
2. Verify that the device is plugged into the correct serial port on the rear of the computer.
3. Verify that the attached serial device works by attaching it to a serial port that is working and configured correctly. If the serial device does not work, either the cable or the serial device has a problem. If the serial device works, the problem may be due to the onboard I/O or the address setting.
4. Make sure the COM settings and I/O address are configured correctly.

Keyboard

Nothing happens when a key on the keyboard was pressed.

1. Make sure the keyboard is properly connected.
2. Make sure there are no objects resting on the keyboard and that no keys are pressed during the booting process.

System Board

1. Make sure the add-in card is seated securely in the expansion slot. If the add-in card is loose, power off the system, re-install the card and power up the system.
2. Check the jumper settings to ensure that the jumpers are properly set.
3. Verify that all memory modules are seated securely into the memory sockets.
4. Make sure the memory modules are in the correct locations.
5. If the board fails to function, place the board on a flat surface and seat all socketed components. Gently press each component into the socket.
6. If you made changes to the BIOS settings, re-enter setup and load the BIOS defaults.